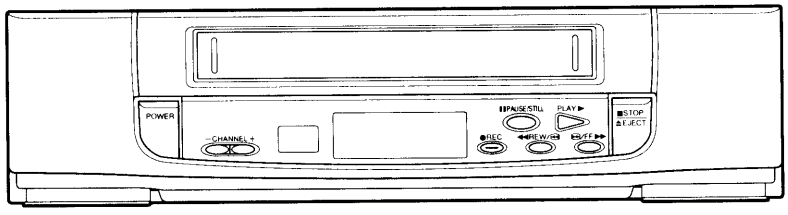
FILE NO.

SANYO

SERVICE MANUAL

Video Cassette Recorder



VHR-256G
(Germany)
VHR-276G
VHR-276EV
(General Europe)
VHR-246E
VHR-286E
VHR-276E
(U.K.)

VHS PAL

CONTENTS

SELF-DIAGNOSIS DISPLAY 2
1. DISASSEMBLY 5
2. ELECTRICAL ADJUSTMENT 9
3. TEST POINTS FOR TAPE PATH ADJUSTMENT 14
4. PARTS LIST
   PACKING MATERIALS 15
   CABINET & CHASSIS PARTS 15
   MECHANISM PARTS 16
   ELECTRICAL PARTS 19
   ACCESSORIES 26
CIRCUIT DIAGRAMS (Refer to the separate volume)

Please see other materials with Reference No. given in table below.

Materials	Model No.	Reference No.
Mechanism Manual	V95 I Mechanism	MM531433
	V95 II Mechanism	MS531500

PRODUCT SAFETY NOTICE

The components designated by a symbol (⚠) in this schematic diagram designates components whose value are of special significance to product safety. Should any component designated by a symbol need to be replaced, use only the part designated in the Parts List. Do not deviate from the resistance, wattage, and voltage ratings shown.

NOTE: 1. Parts order must contain model number, part number, and description.
2. Substitute parts may be supplied as the service parts.
3. N.S.P.: Not available as service parts.

Design and specifications are subject to change without notice.

Notice

SANYO

☐ CORRECTION ◉ PRODUCTION CHANGE
☐ SERVICE FLASH ☐ ADD INFORMATION

FILE No.

Please add this notice to the Service manual listed below.

Category : Video Cassette Recorder — Date :Feb. 3.1997

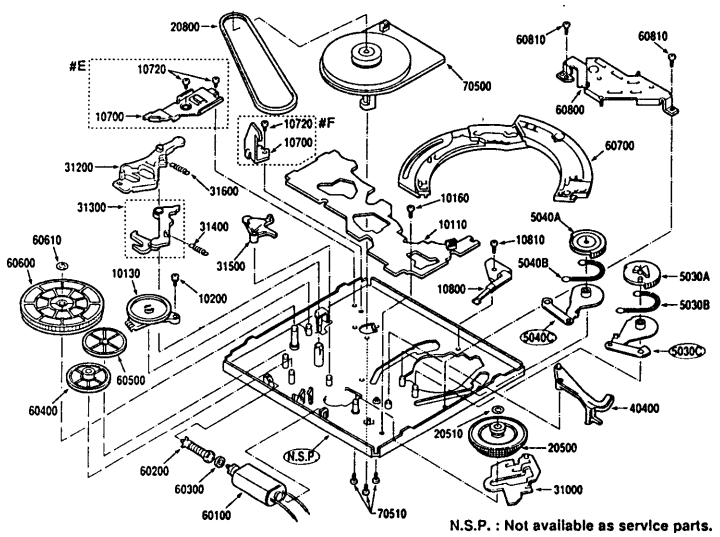
Model Name	Reference No.	Destination
VHR-256G	SM531501	Germany
VHR-276G	SM531501	General Europe
VHR-276EV	SM531501	General Europe
VHR-246E	SM531501	U.K.
VHR-286E	SM531501	U.K.
VHR-276E	SM531501	U.K.

The reason of change.

A : Misprint B : Quality Reliability C : Standardization D : Design
E : Deletion F : Addition G : Multiple Use

Section	Loc.No.		Part No.	Description	Interchange-ability	Reason
MECHANISM PARTS 1 (Page 16)	20300	Old	613 151 8889	COMPL,MOUNTING CLUTCH	Yes with New	G
		New	613 171 6896	COMPL,MOUNTING CLUTCH	Yes with Old	
	51000	Old	613 161 2365	ASSY,LEVER,ACT L GUIDE	Yes with New	G
		New	613 173 6153	ASSY,LEVER,ACT L GUIDE	Yes with Old	
MECHANISM PARTS 2 (Page 18)	10700	Old	613 153 0836	MOUNTING,HARNESS	See Note 1	G
		New	613 153 0836	MOUNTING,HARNESS(#E)		
			613 167 5926	MOUNTING,CAPSTAN(#F)		
	10720	Old	412 048 9608	SPECIAL SCREW-2.6X3	See Note 1	G
		New	412 048 9608	SPECIAL SCREW-2.6X3(#E)		
			412 048 8007	SPECIAL SCREW-2.6X6(#F)		

Note 1 : Location numbers 10700 and 10720 have two types of parts.
(#E) and (#F) parts have different shapes, measurements, number of screws, and positions for attaching the screws.



N.S.P. : Not available as service parts.

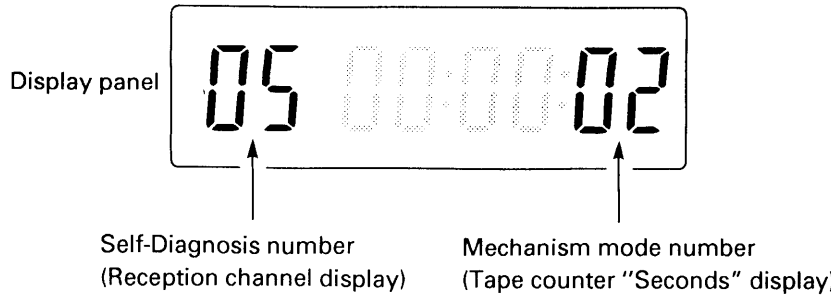
SELF- DIAGNOSIS DISPLAY

Mechanism Mode Display/Head Output Drop Warning Display/Cylinder Rotation Accumulated Time Display

This unit displays the diagnosis contents of abnormalities and the mechanism mode on its display panel in 2-digit numbers. When the head playback output has dropped, the "L" sign will be blinked. Some models (listed later) will also display the cylinder rotation accumulated time.
These display shows the outline of the problems. Use it as a reference when servicing the unit.

1. Self-Diagnosis Contents and Mechanism Mode Display

- When the STOP button on the remote control is pressed for about 10 seconds continuously, the self- diagnosis number will be displayed on the reception channel display of the display panel and number indicating the failed mechanism mode (changed mode when being shifted) on the tape counter "seconds" display for 3 seconds each.
- During self-diagnosis display, displays other than the diagnosis number/mechanism mode number and the cylinder accumulated rotation time display described later (some models only) will be turned off and when displays end, the normal display will be returned automatically.
- Refer to "Self-Diagnosis Contents" for the self-diagnosis numbers and the "Mechanism Mode Display Contents" for the mechanism mode numbers.



Self-Diagnosis Contents

No.	Problem	Main Possible Cause	Mechanism Operations and State After Occurrence
00	There is no abnormality in the mechanism.		
01	The cylinder motor does not rotate.	• The cylinder motor is faulty. • The control of the cylinder motor is faulty. • The tape winds around the cylinder.	Shifts to the STOP mode.
02	The take-up reel does not rotate.	• The take-up reel is caught. • The reel belt is faulty. • The take-up torque has decreased.	Shifts to the STOP mode.
03	The capstan motor does not rotate.	• The capstan motor is faulty. • The control of the capstan motor is faulty.	Shifts to the STOP mode.
04	The tape cannot be loaded with the cassette inserted. (But unloading can be performed.)	• Error in the operations of the tape loading mechanism. • Foreign particles in the tape load-ing mechanism. • The tape end sensor is faulty. • The reel brake of the tape cassette has not been released.	Unloads, shifts to the INITIAL mode, and the power goes off.
05	Tape loading and unloading cannot be performed with the cassette inserted.	• The tape guide is caught. • The loading motor is faulty. • The control of the loading motor is faulty.	The power is forcibly turned off with the mechanism at its current position.

No.	Problem	Main Possible Cause	Mechanism Operations and State After Occurrence
06	Front unloading cannot be performed when ejecting the cassette. (Front loading can be performed.)	• The cassette drive mechanism is faulty. • The front door is caught.	Front loads and shifts to the STOP or INITIAL mode. • When the power switch is turned on before eject operations: Shifts to the STOP mode. • When the power switch is turned off before eject operations: Shifts to the INITIAL mode and the power goes off.
07	Front loading and front unloading cannot be performed when ejecting the cassette.	• The tape cassette is caught in the cassette drive mechanism. • The main cam and front rack gear of the front loading mechanism have not engaged properly. • The gears of the front loading drive mechanism have not engaged properly.	The power is forcibly turned off with the mechanism at its current position.
08	The mechanism becomes 1 (REVIEW) while moving from 2 (IDLER), 3(STILL), 4 (BRAKE), and to 5 (STOP).	• The mechanism mode switch contact is faulty.	The power is forcibly turned off with the mechanism at its current position.
09	The mechanism becomes 7 (INITIAL) while moving from 1 (REVIEW), 2 (IDLER), 3(STILL), 4 (BRAKE), and to 5 (STOP).	• The mechanism mode switch contact is faulty.	Carries out tape take-up operations, shifts to the INITIAL mode, and the power goes off.

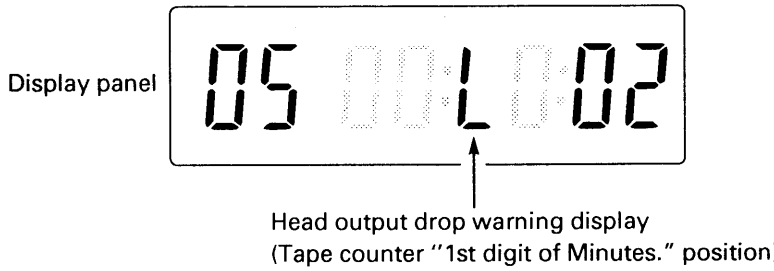
Note: For details of mechanism operations corresponding to the mechanism positions of the self-diagnosis numbers 08 and 09 above, refer to the separate volume on the V95 I mechanism manual.
These manual reference numbers are shown in the cover.

Mechanism Mode Display Contents

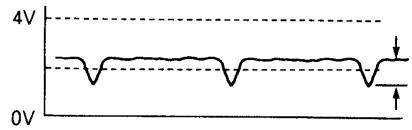
Mode No.	Mechanism Mode	Mode No.	Mechanism Mode	Mode No.	Mechanism Mode
00	CASSETTE OUT	08	PLAY	16	VIDEO INSERT
01	STANDBY	09	REC	17	VIDEO INSERT – PAUSE
02	STOP	10	AUDIO DUBBING	18	AUDIO/VIDEO INSERT
03	STILL	11	X2 SPEED PLAY	19	REVERSE X2 SPEED PLAY
04	REC-PAUSE	12	CUE		
05	AUDIO DUBBING – PAUSE	13	REVIEW		
06	FRAME ADVANCE	14	FAST FORWARD		
07	SLOW	15	REWIND	99	OTHERS

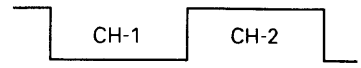
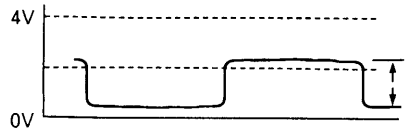
2. Head Output Drop Warning Display

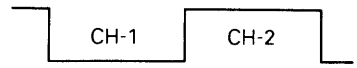
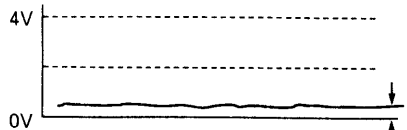
- When the STOP button on the remote control is pressed for 10 seconds continuously 10 seconds after play starts, "L" will be displayed blinking at the first digit of the minutes position on the tape counter when the head output is lower than the specified value to indicate an abnormality.
- The cause of the abnormality may be due to drop in the playback output caused by drop in the efficiency of the cassette used or head clogging. Refer to "Head Playback Output Voltage Check" as a means to judge the abnormality.

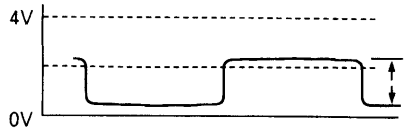


Head playback output voltage check

<table>
<tr><th>Cassette Used</th><th>Warning Display</th><th>Envelope Detection Output Voltage</th><th>Main Cause</th></tr>
<tr><td>Cassette with normal playback output</td><td>—</td><td>Envelope detection output (IC301 Pin 25 or C3016 HOT side)
 

Switching pulse (TP183)
 
</td><td>When the output voltage difference of the two channels is 0.5 to 0.95V
• The video heads of both are normal</td></tr>
<tr><td rowspan="2">Recorded cassette (With tabs)</td><td>"L" blinking</td><td>Envelope detection output (IC301 Pin 25 or C3016 HOT side)
 

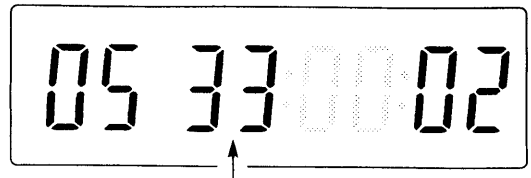
Switching pulse (TP183)
 
</td><td>When the output voltage difference of the two channels is more than 0.95V
• Tracking adjustment has not been performed accurately
• One video head is clogged
• One video head has worn out</td></tr>
<tr><td>"L" blinking</td><td>Envelope detection output (IC301 Pin 25 or C3016 HOT side)
 

Switching pulse (TP183)
</td><td>When the average output voltage of the two channels is less than 0.5V
• Tracking adjustment has not been performed accurately
• Both video heads are clogged
• Both video heads have worn out</td></tr>
<tr><td rowspan="2">Rental cassette (Without tabs)</td><td>"L" blinking</td><td>Envelope detection output (IC301 Pin 25 or C3016 HOT side)
 

Switching pulse (TP183)
</td><td>When the output voltage difference of the two channels is more than 0.95V
• Tracking adjustment has not been performed accurately
• One video head is clogged
• One video head has worn out</td></tr>
<tr><td colspan="3">Some rental cassettes may have extremely low video playback outputs even when both video heads are normal. As the average output voltage of the two heads may be less than 0.5V for some, no warning displays will be shown.</td></tr>
</table>

3. Cylinder rotation accumulated time display VHR-246E, 276E, and 286E employs this function, However, this function will be equipped only from the middle of production.

- Press the STOP button on the remote control for approximately 10 seconds and the cylinder rotation accumulated time excluding the cassette out and standby operation time will be displayed on the "Hours" display in units of 100 hours. ("33" will be displayed for 3 seconds for 3,200 to 3,299 hours.)
- To erase the cylinder rotation accumulated time display, press the RESET button on the remote control during the accumulated time display.

Display panel 

Cylinder rotation accumulated display (Tape counter "Hours" display)

1. DISASSEMBLY

1-1. REMOVAL OF CABINET, MECHANISM UNIT, AND MAIN BOARD

REMOVING THE CABINET PARTS (Fig. 1-1-1)

1. Remove the cabinet and bottom cover by removing the four screws ① and four screws ②.
2. Remove the front panel by removing the locks of the clamps (A) using a screwdriver, etc. and slightly rotating the bottom part in the direction of the arrow.

Notes:
- Electrical adjustments for the this model can be performed with only the cabinet removed.
- When replacing the bottom cover, do not tighten the screws ② too much. Excess tightness may damage the screw taps on the chassis.

REMOVING THE MECHANISM MAIN UNIT AND THE CP-1 PWB ASSEMBLY (Fig.1-1-2 and 1-1-3)

After removing the cabinet parts, remove the mechanism unit and the CP-1 PWB assembly connected as follows.

1. Spread out the lock claws (C) in the arrow direction slightly and remove the TM-1 PWB as shown in Fig. 1-1-2.
2. Remove the screw ④ at the back of the chassis.
3. Remove the red screw ⑤ in the chassis, remove the red screw ⑥, and remove the holder 1 in this order.
4. Remove the holder 2 by removing the screw ⑦.
5. Remove the two screws ⑧ and two screws ⑨ of the mechanism unit. The two screws ⑨ of the cassette tray can be removed easily by pushing the tray lock lever in the arrow direction to remove the lock as shown in the enlarge view A and by pushing the lid opener lever in the arrow direction to remove the lock as shown in the enlarge view B.
6. Lift up the whole mechanism unit and main board (CP-1 PWB assembly), and as shown in Fig. 1-1-3, push the two lock claws (D) of the chassis in the arrow direction so that they can be removed from the chassis.

M-PP2/G5-1

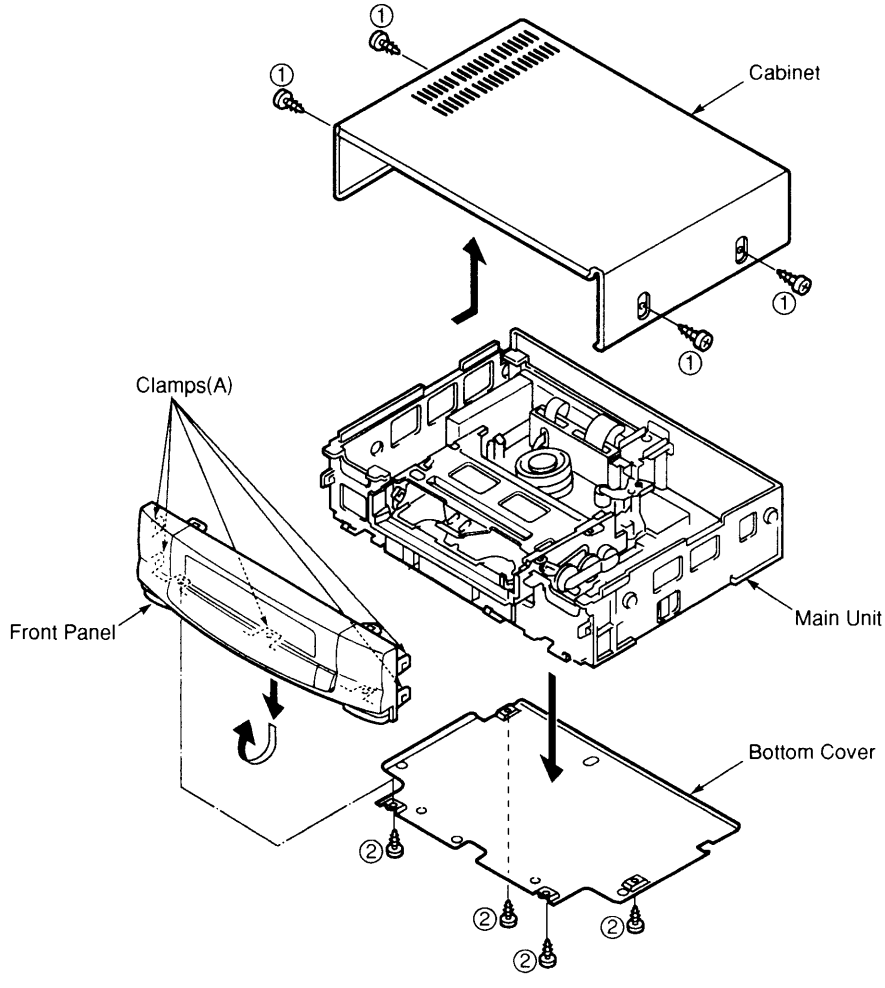


Fig. 1-1-1

M-PP2/G5-2

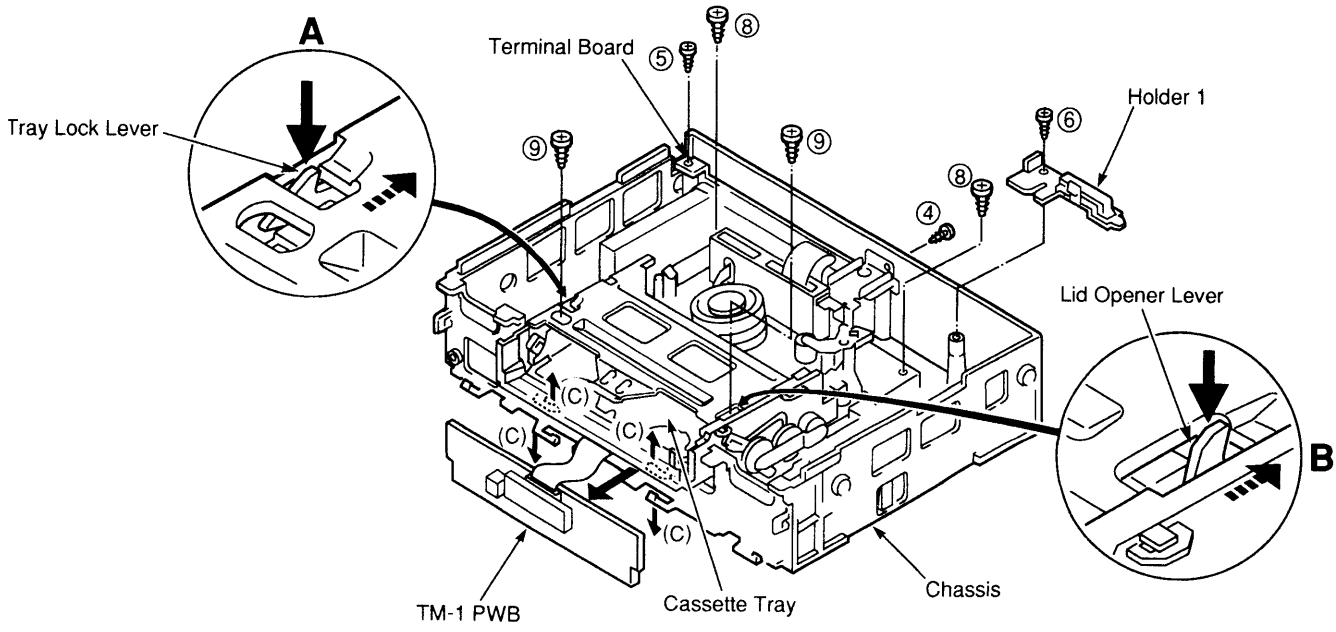


Fig. 1-1-2

M-PP2/G5-3

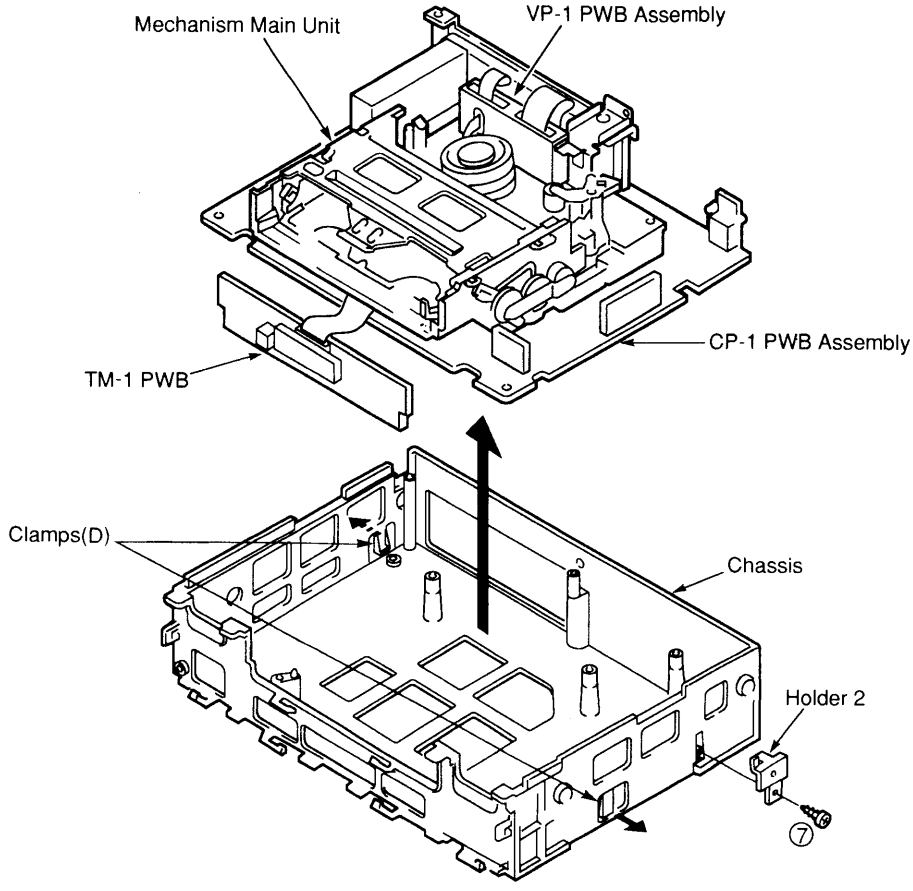


Fig. 1-1-3

1-2. TEMPORARILY SETTING UP AND CONNECTING CP-1 PWB ASSEMBLY

The following is an example of how to place and connect the main board without a jig, when repairing the CP-1 PWB assembly.

1. Place the mechanism unit and main board up side down as a whole on a flat surface with the foil side of the main board facing up.
2. Operate the unit using the buttons on TM-1 PWB or the remote control.

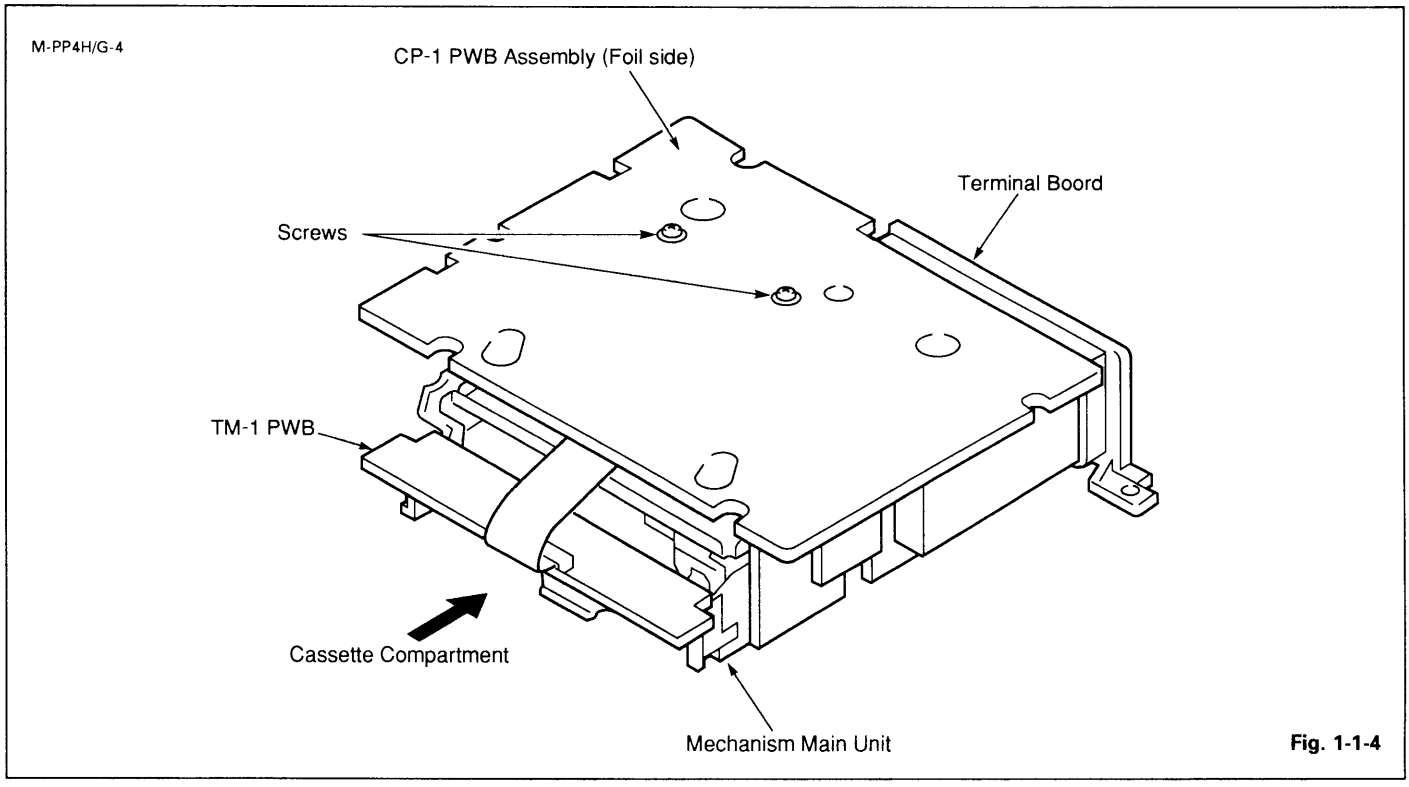


Fig. 1-1-4

1-3. INSTALLATION OF THE FRONT PANEL

When installing the front panel to the chassis after repaires and adjustments.

1. Pressing down the door opener lever of the mechanism main unit.
2. Set the cassette door to half-opened state as shown in Fig.1-1-5, and install the front panel to the chassis.

Note: Opened cassette door position does not install the front panel to the chassis.

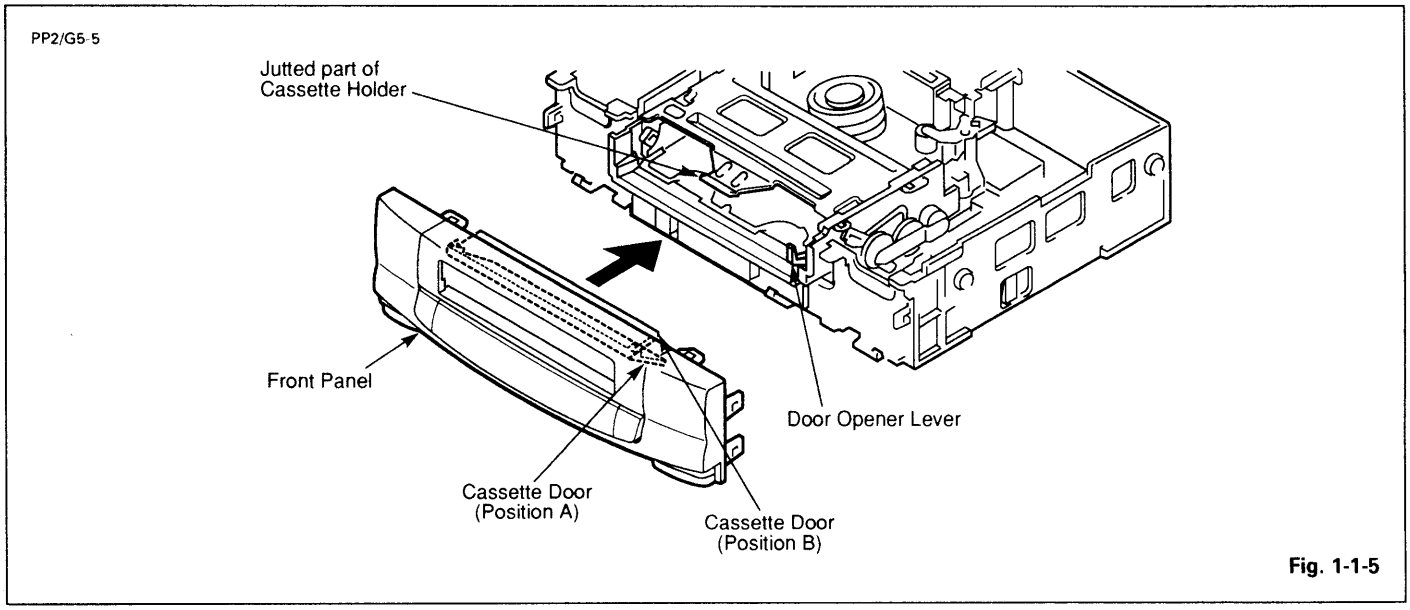
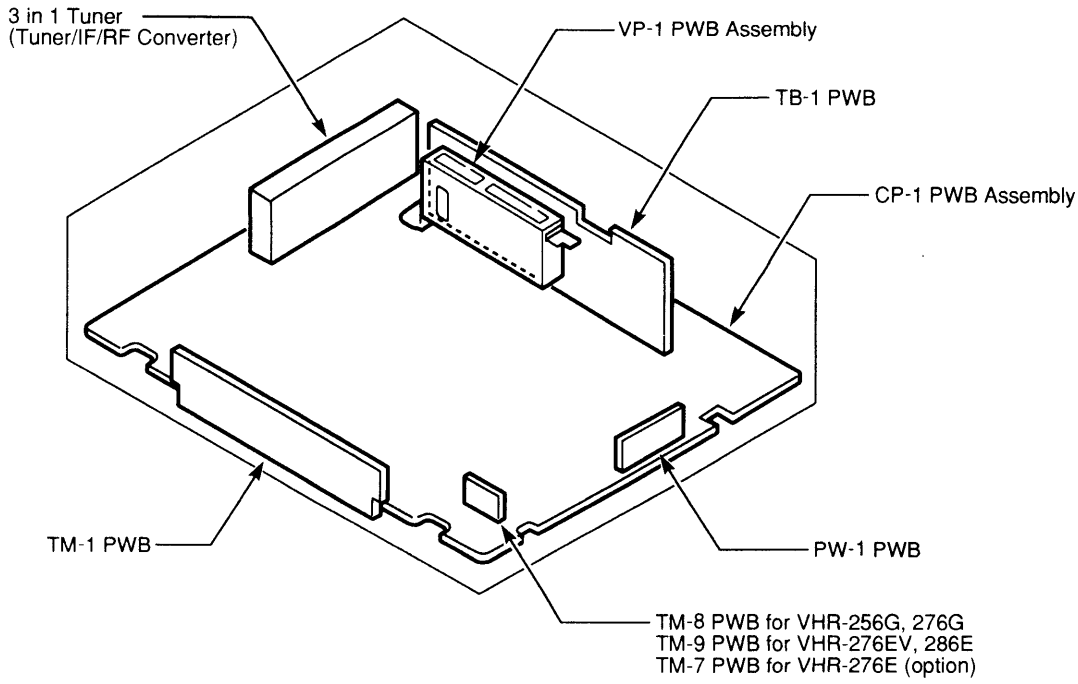


Fig. 1-1-5

1-4. MAIN CIRCUIT BOARD LOCATIONS

L-PP2/G5



2. ELECTRICAL ADJUSTMENT

VCR PRESETTING

There are two types of models, one type is equipped with the OSD (on screen display) and the other is not.
For the one with the OSD function, select the required mode according to the following steps.
This VCR need three basic presetting by using the menus displayed on-screen. After all connection have been made, then follow steps 1 to 3 to preset the VCR.
The three presetting steps will be displayed in sequence on TV screen. The setting are entered with the remote control.

Turn on the VCR

1. Adjusting the TV receiver to the video channel: The AUTO SETUP screen will appear. When the video channel has been preset, press the OK button on the remote control.
2. Country selection: Using the numeric button, select the country of use.
3. Language selection: When the desired language has been select, press the MENU/ TV button.

When steps 1 to 3 have been finish, ready to operate the all operating mode.

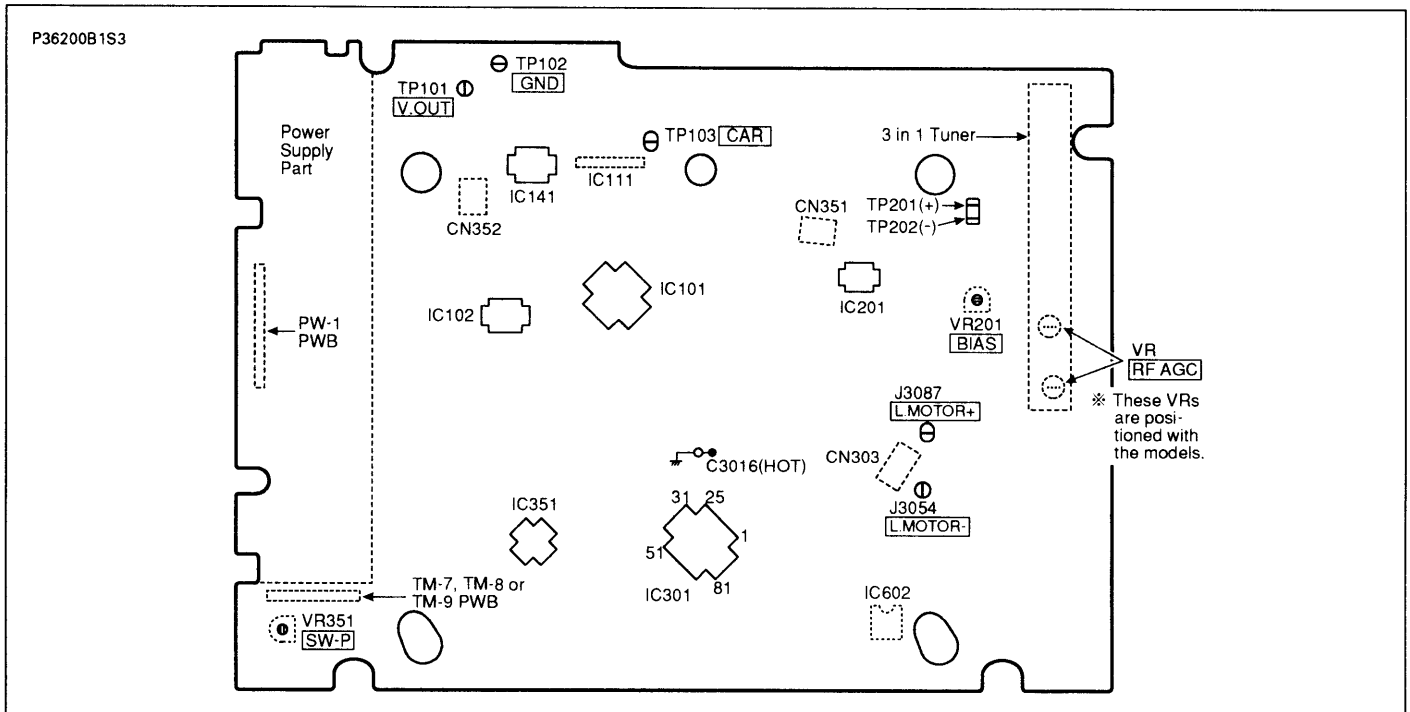
2-1. SERVO CIRCUIT ADJUSTMENT

- These adjustments should be done upon completion of the tape transport adjustments.
- If the tape transport adjustments (except the tilt adjustment) are done after these adjustments, follow the procedures again in section 2-1-3, "switching position adj."
- When a cassette tape is loaded, auto-tracking will be set immediately after starting the first playback. As this will deviate the tracking center set, be sure to press the channel buttons (+) or (–) several times directly after starting playback to prevent auto-tracking from being set.

2-1-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Oscilloscope	Vertical sensitivity Bandwidth	: 5 mV/DIV, external trigger : more than 10 MHz
Alignment Tape	VHJ-0009 or VHJ-0023	: SP mode, monoscope, 6 KHz
Blank Tape	VHS-type cassette tape	
Monitor TV		

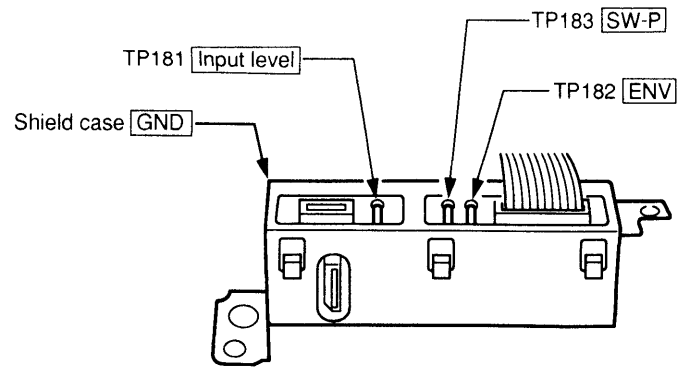
2-1-2. LOCATION OF ADJUSTMENT POINTS



CP-1 PWB (Foil side)

Fig. 2-1-1

P37400B2S5



VP-1 PWB Assembly

Fig. 2-1-2

Note:

- Self-recording means "Record any broadcasting or video signal and play back the just-recorded portion."

2-1-3. SWITCHING POSITION ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
TP101 (VIDEO OUT) TP183 (SW-P)	Oscilloscope	PLAY mode Alignment tape (VHJ-0009 or VHJ-0023)

Adj. Location	Adj. Value
VR351 (SW-P)	6.5 H ± 0.5 H

1. Play back the alignment tape, and press the CHANNEL buttons (+) or (–) several times directly.
2. Set the tracking control position to the center by pressing CHANNEL buttons (+) and (–) simultaneously.
3. Adjust VR351 (SW-P) so that the width of "T" becomes 6.5 H ± 0.5 H as shown in Fig. 2-1-3.

WS-SWP

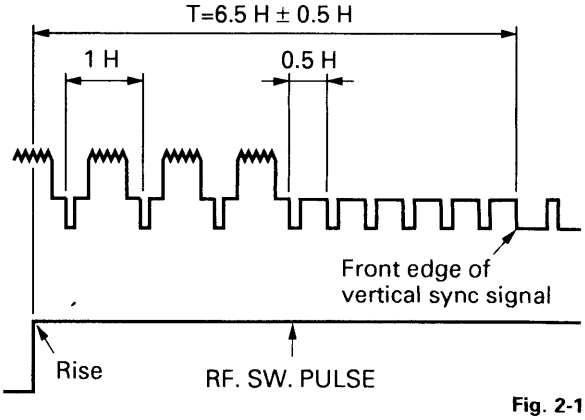


Fig. 2-1-3

2-1-4. STILL V-LOCK ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
Picture of monitor TV	Color bar generator or broadcasting monitor	Self-recording (SP mode) Blank tape

Adj. Location	Adj. Value
CHANNEL (+) button CHANNEL (–) button	The minimum vertical shake

1. Play back the just-recorded portion and then set the VCR in the STILL mode.
2. Press the CHANNEL (+) button or the CHANNEL (–) button so that any vertical shake of the picture is minimized.

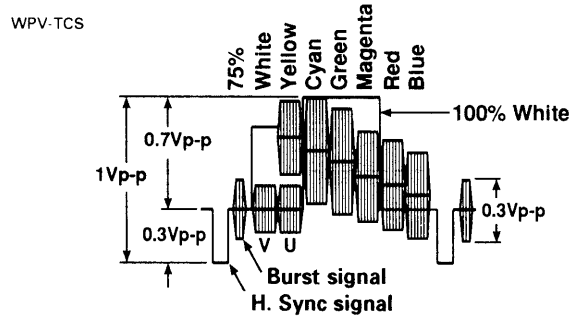
2-2. VIDEO CIRCUIT ADJUSTMENT

- In this model, video circuit adjustments are not performed. To check whether operations are normal, check the AGC level and PB-Y level using the following method.
- Use the adjustment relay jig to provide simple repairing of the VP-1 PWB assembly.

2-2-1. TEST EQUIPMENT AND STANDARDS REQUIRED

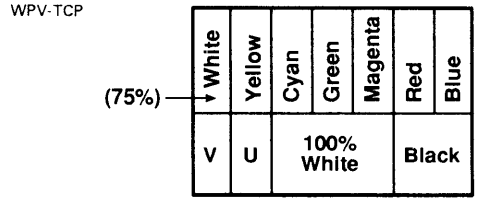
Color Bar Signal Generator	PAL Color bar signel with 100% white level (EBU color bar signel)
Oscilloscope	Vertical sensitivity : 5 mV/DIV, external trigger Bandwidth : more than 10 MHz
Oscilloscope Probe	Input capacity : less than 25 pF (10:1) less than 40 pF (1:1) Covering frequency : DC ~ 40 MHz (10:1) DC ~ 30 MHz (1:1)
Digital Voltmeter	DC range
Alignment Tape	VHJ-0008 or VHJ-0023 : SP mode, color bar, 1 kHz (Color bar signal waveform is described below. Refer to Fig. 2-2-1)
Adjustment Relay Jig	VHJ-0065 : 5-wire flat cable for VP-1 PWB assembly

ALIGNMENT TAPE COLOR BAR SIGNAL



Color bar signal waveform (VHJ-0008)

Fig. 2-2-1



Color bar pattern (VHJ-0008) on monitor TV

Fig. 2-2-2

ADJUSTMENT RELAY JIG

Connect the flat cable end from the cylinder assembly to the VP-1 PWB assembly using the relay jig to provide simple repairing or adjustment of the VP-1 PWB assembly, as shown in Fig. 2-2-3. Further, when adjusting the VP-1 PWB assembly, be sure to make contact an end of shield case with bracket of the VP-1 PWB assembly to maintain the shield effect. If the VP-1 PWB assembly does not contact, there is insufficient ground and no proper play back image can be obtained.

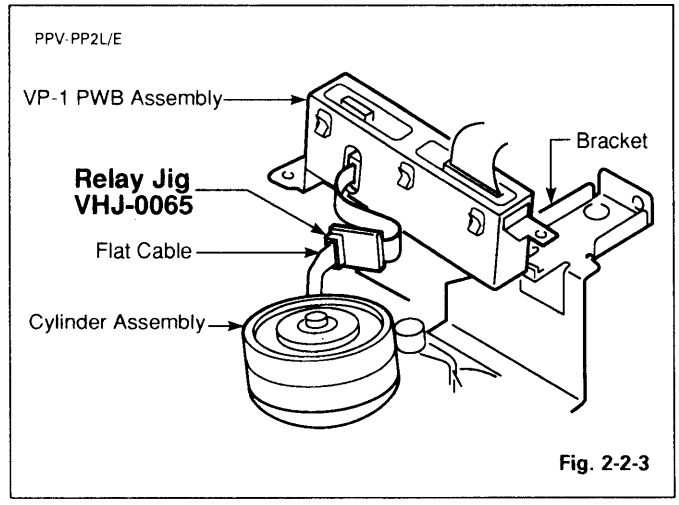
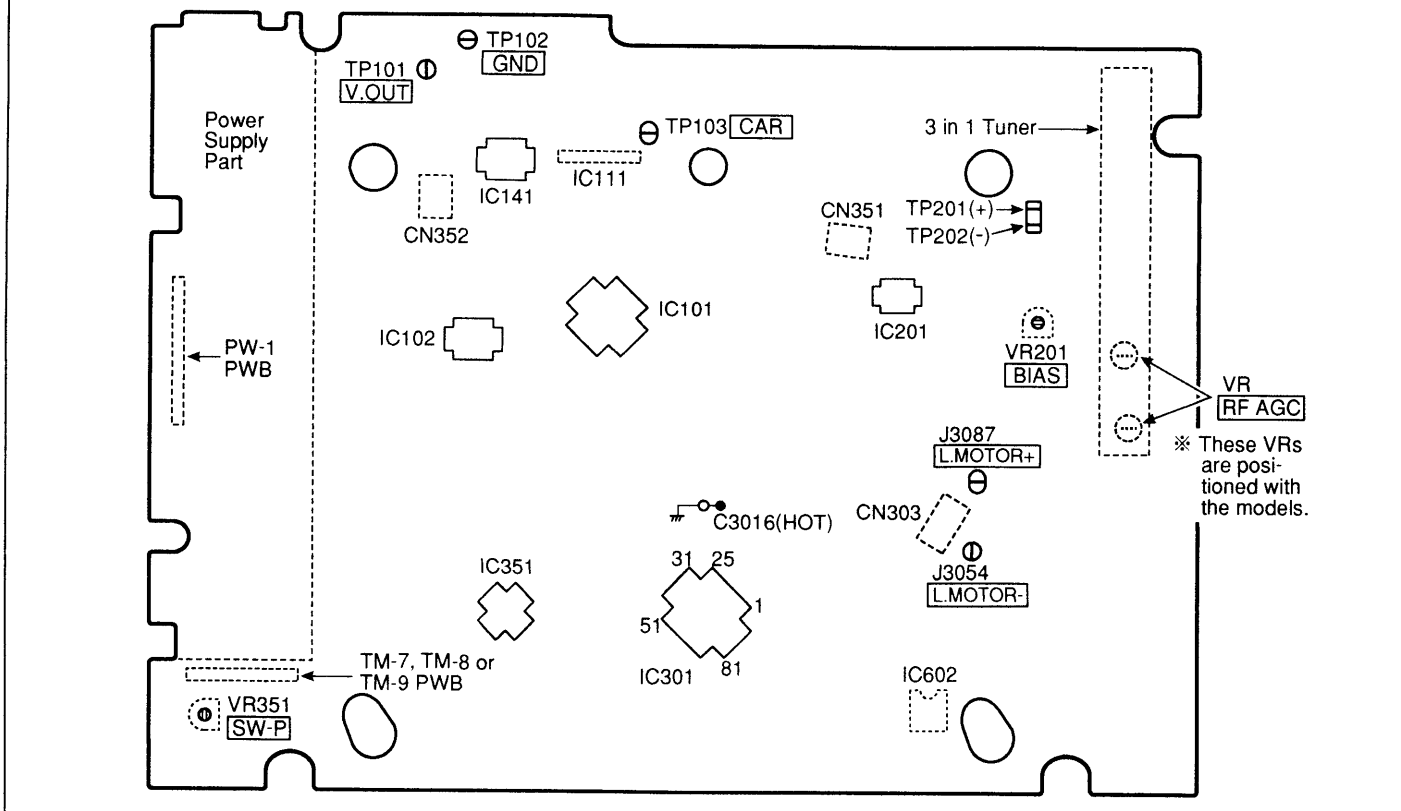


Fig. 2-2-3

2-2-2. LOCATION OF TEST POINTS



CP-1 PWB (Foil side)

Fig. 2-2-4

2-2-3. AGC LEVEL CHECK.

Measuring Point	Measuring Equipment	Adj Condition
IC101 pin 46	Color bar generator Oscilloscope (10:1 probe)	E-E mode

Adj. Location	Specified Value
—	0.5 Vp-p ± 0.05 Vp-p

1. Connect the color bar generator to the video input terminal.
2. Make sure that the AGC level is 0.5 Vp-p ± 0.05 Vp-p as shown in Fig. 2-2-5.

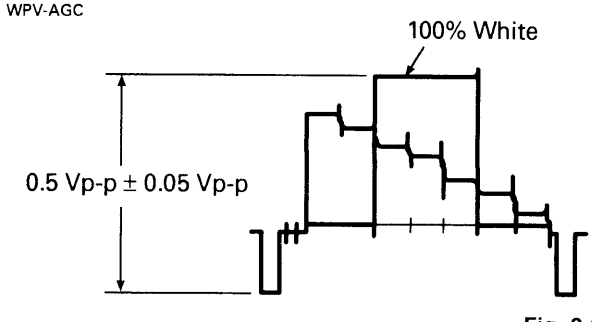


Fig. 2-2-5

2-2-4. PB-Y LEVEL CHECK.

Measuring Point	Measuring Equipment	Adj Condition
TP101 (VIDEO OUT)	Oscilloscope	PLAY mode Alignment tape (VHJ-0008 or VHJ-0023)

Adj. Location	Specified Value
—	1 Vp-p ± 0.1 Vp-p

1. Terminate the video output terminal with a 75Ω resistor.
2. Make sure that the video luminance signal level is 1 Vp-p ± 0.1 Vp-p. (Refer to Fig. 2-2-6)

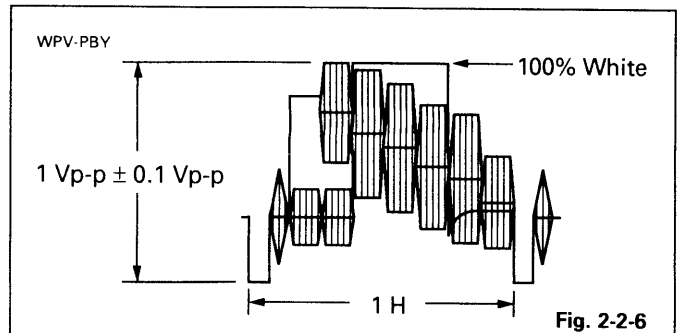


Fig. 2-2-6

2-3. AUDIO CIRCUIT ADJUSTMENT

- Before making these adjustments, be sure to make the adjustments described in the tape path adjustment, especially the ACE heads adjustments (refer to the separate volume "Mechanism Manual") so that the tape traveling between the supply side guide roller and loading guide post runs without fluttering or curling.
- Before making these adjustments (except the ACE heads adjustments), be sure to make the adjustments described in section 2-1, "Servo Circuit." and section 2-2, "Video Circuit."

2-3-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Oscilloscope	Vertical sensitivity : 10 mV/DIV Bandwidth : more than 30 MHz
AC Voltmeter	Effective value indication Input frequency : 10 Hz ~ 20 kHz Input impedance : more than 1 MΩ Measurement level : 1 mV (full scale)
Blank Tape	VHS-type cassette tape

2-3-2. LOCATION OF ADJUSTMENT POINTS

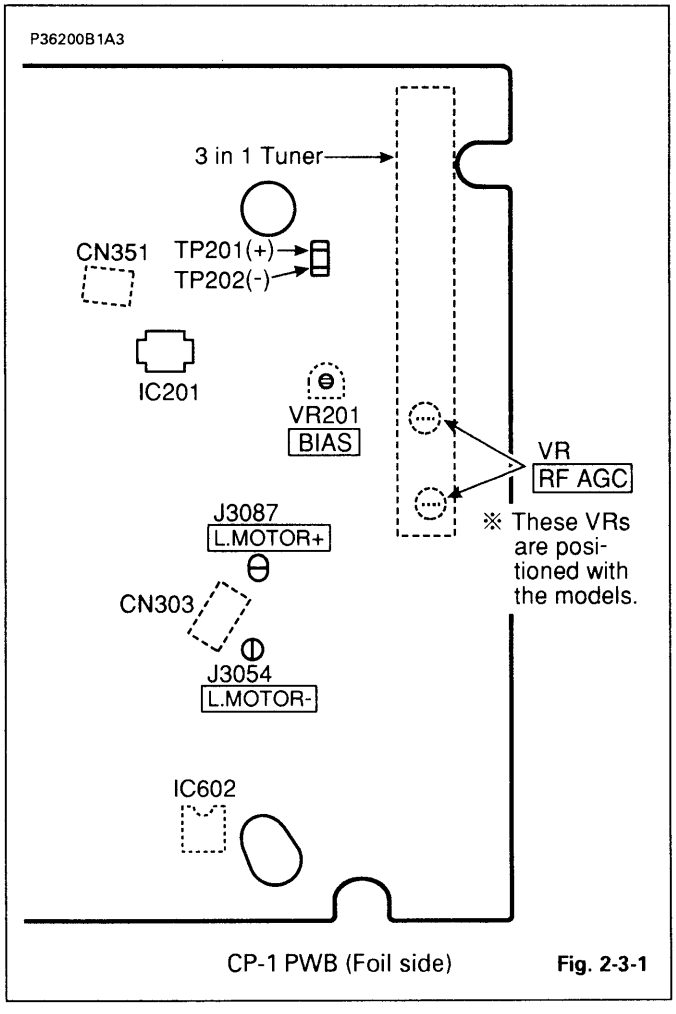


Fig. 2-3-1

2-3-3. BIAS LEVEL ADJ.

Measuring Point	Measuring Equipment	Adj Condition
TP201 (HOT) TP202 (COLD)	Oscilloscope AC voltmeter	REC mode Blank tape

Adj. Location	Adj. Value
VR201 (BIAS)	26 mVrms

1. Load the VCR with a blank tape and select the record mode without all incoming signal.
2. After confirming on the oscilloscope that a 70 kH ± 5 kHz sine wave is being output, adjust VR201 (BIAS) so that the AC voltmeter's reading is 26 mVrms.

2-4. IF CIRCUIT ADJUSTMENT

- In this model, the circuits of the TUNER, IF, and RF converter have been made into one. Therefore, should one circuit malfunction , the whole unit must be replaced.

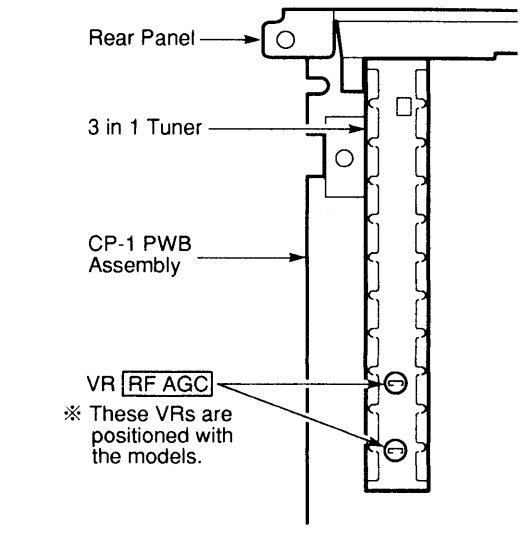
Note: The 3 in 1 tuner dose not need any adjustments, because precise adjustments were down befor shipment.

- The adjustments for the IF (RF AGC) circuit of the 3 in 1 tuner are described below.

2-4-1. TEST EQUIPMENT AND STANDARD REQUIRED

Monitor TV	

2-4-2. LOCATION OF ADJUSTMENT POINT



3 in 1 Tuner

Fig. 2-4-1

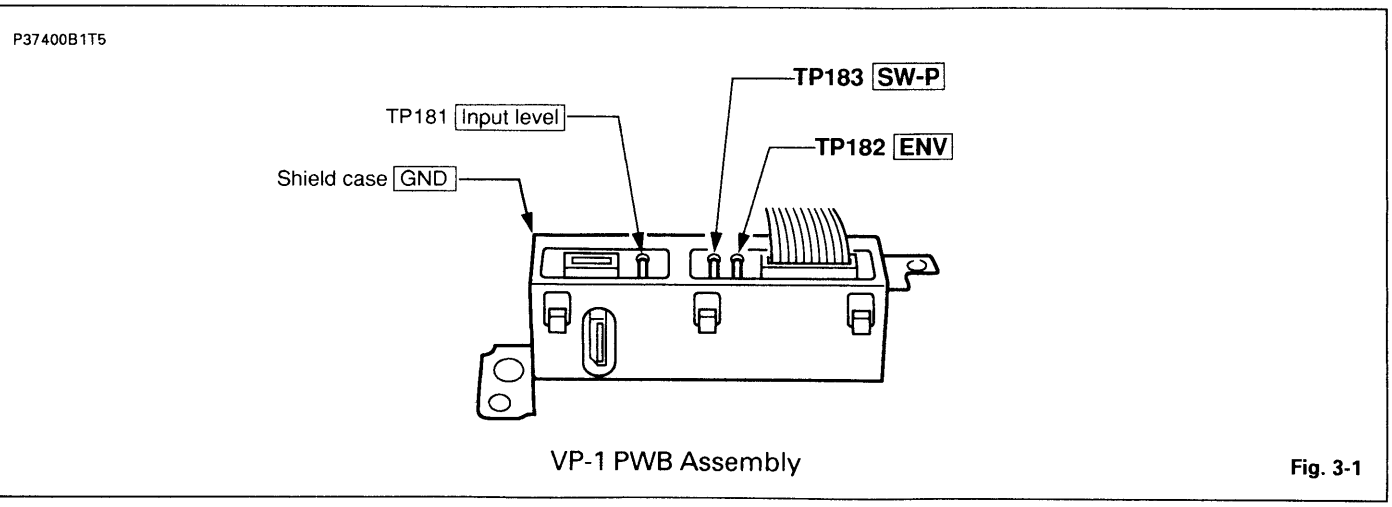
2-4-3. RF AGC ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
Picture of monitor TV	Monitor TV	E-E mode
Adj. Location		**Adj. Value**
VR (RF AGC) (on the 3 in 1 tuner)		S/N is best point

1. Connect the monitor TV to the VHF/UHF antenna output terminal.
2. Connect the VHF or UHF antenna to the VHF/UHF antenna input terminal.
3. Receive the middle electrical field (70 dBμ ~ 90 dBμ) of the VHF or UHF channel, and slowly turn the VR (RF AGC) from the point where snow-noise is present to the point where it just disappears from the monitor TV.
4. Confirm by monitor TV that there is no beat and saturation (S/N is best point) when receiving any TV channel.

3. TEST POINTS FOR TAPE PATH ADJUSTMENT

Test points TP182 (ENV) and TP183 (SW-P) for tape path adjustment are shown in figure below.
For adjustment, refer to the separate volume "V95 I Mechanism Manual (MM531433)."



VP-1 PWB Assembly

Fig. 3-1

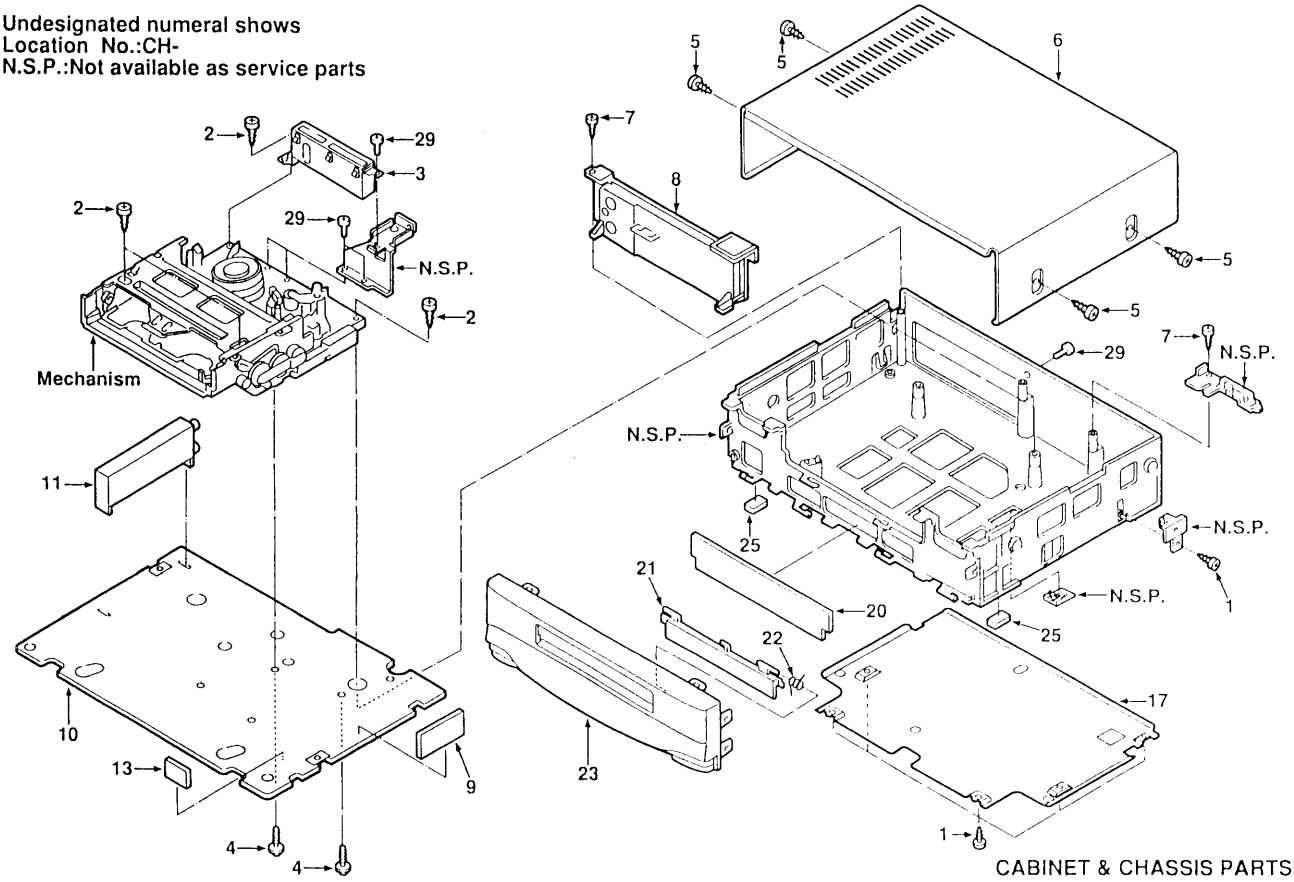
4. PARTS LIST

LOCATION	PARTS NO.	DESCRIPTION
PACKING MATERIALS		
	613 167 4721	CARTON CASE(VHR-256G ONLY)
OR	613 167 4738	CARTON CASE(VHR-246E ONLY)
OR	613 167 4745	CARTON CASE(VHR-286E ONLY)
OR	613 168 4461	CARTON CASE(VHR-276E ONLY)
OR	613 166 2766	CARTON CASE(VHR-276G ONLY)
OR	613 168 1804	CARTON CASE(VHR-276EV ONLY)
	613 166 7105	CUSHION,FRONT
	613 166 7112	CUSHION,BACK
	613 139 8047	POLYE COVER,INNER-K (VHR-256G,276G,276EV)
OR	613 099 1768	POLYE COVER,INNER-K (VHR-246E,286E,276E)

****

CABINET & CHASSIS PARTS		
CH-1	411 137 0007	SCR L-TPG BIN 3X10
CH-2	411 021 7907	SCR S-TPG BIN 4X12
CH-3	613 167 0983	COMPL PWB,VP-1(VHR-256G,276G,276EV)
OR	613 167 3311	COMPL PWB,VP-1(VHR-246E ONLY)
OR	613 167 3328	COMPL PWB,VP-1(VHR-286E,276E)
CH-4	412 052 5108	SPECIAL SCREW-2.6X12
CH-5	412 028 9406	SPECIAL SCREW
CH-6	613 160 6036	COVER TOP(VHR-256G ONLY)
OR	613 160 8931	COMPL,COVER TOP(VHR-246E,276E)
OR	613 169 0134	COMPL,COVER TOP(VHR-286E ONLY)
OR	613 163 4794	COVER TOP(VHR-276G,276EV)
CH-7	411 021 3800	SCR S-TPG BIN 3X10
CH-8	613 160 6401	TERMINAL
CH-9	613 160 3615	COMPL PWB,PW-1
CH-10	613 167 3830	COMPL PWB,CP-1-A(VHR-256G ONLY)
OR	613 167 3847	COMPL PWB,CP-1-A(VHR-246E ONLY)
OR	613 167 3854	COMPL PWB,CP-1-A(VHR-286E ONLY)
OR	613 168 4027	COMPL PWB,CP-1-A(VHR-276E ONLY)
OR	613 166 2858	COMPL PWB,CP-1-A(VHR-276G ONLY)
OR	613 168 1316	COMPL PWB,CP-1-A(VHR-276EV ONLY)
CH-11	645 007 1492	TUNER,RF/TU/IF(VHR-256G,276G,276EV)
OR	645 007 1539	TUNER,RF/TU/IF(VHR-246E,286E,276E)
CH-13	613 134 4730	COMPL PCB,TM-8(VHR-256G,276G)
OR	613 165 1722	COMPL PWB,IM-7 (OPTION FOR VHR-276E ONLY)
OR	613 158 5751	COMPL PCB,TM-9(VHR-286E,276EV)
CH-17	613 160 5091	COVER BOTTOM
CH-20	613 160 8030	COMPL PWB,TM-1
CH-21	613 167 4691	DOOR CASSETTE(VHR-256G ONLY)
OR	613 167 4707	DOOR CASSETTE(VHR-246E ONLY)
OR	613 167 4714	DOOR CASSETTE(VHR-286E ONLY)
OR	613 168 4423	DOOR CASSETTE(VHR-276E ONLY)
OR	613 166 2667	DOOR CASSETTE(VHR-276G ONLY)
OR	613 168 1798	DOOR CASSETTE(VHR-276EV ONLY)
CH-22	613 153 0478	SPRING
CH-23	613 167 4516	ASSY,CABINET FRONT(VHR-256G,246E)
OR	613 167 4523	ASSY,CABINET FRONT(VHR-286E ONLY)
OR	613 168 4386	ASSY,CABINET FRONT(VHR-276E ONLY)
OR	613 166 2469	ASSY,CABINET FRONT(VHR-276G ONLY)
OR	613 167 5315	ASSY,CABINET FRONT(VHR-276EV ONLY)
CH-25	613 121 1001	STAND,FELT,FRONT
CH-29	411 001 1901	SCR S-TPG BIN 3X6

Undesignated numeral shows
Location No.:CH-
N.S.P.:Not available as service parts



CABINET & CHASSIS PARTS

CH-PP2/G5

MECHANISM PARTS

NOTE

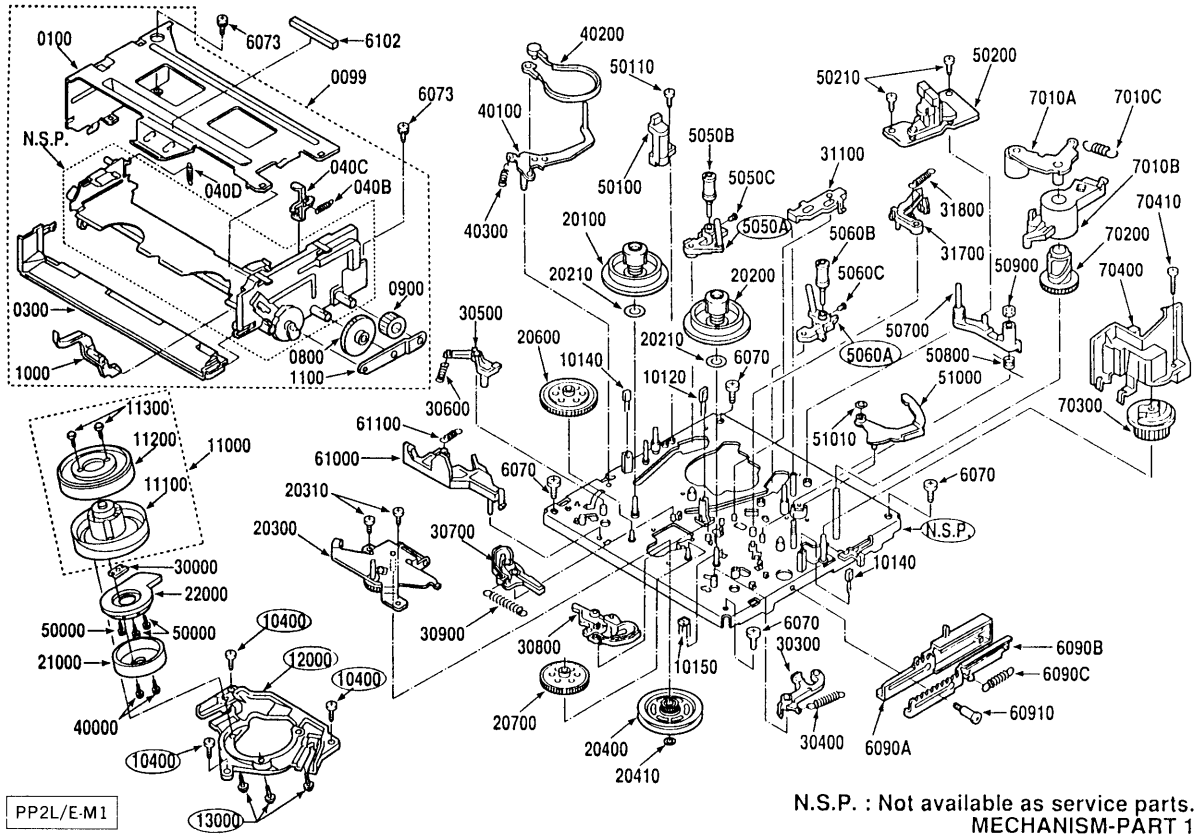
1. This model uses two types of mechanism-the V95 I mechanism and V95 II mechanism shown in Fig A and Fig B. These mechanism can be differentiated by whether the Location Number 12000 mounting cylinder is equipped or not. The mechanism with the mounting cylinder is the V95 I mechanism, and the one without is the V95 II mechanism.
2. Parts marked with(#A) under DESCRIPTION in the parts list are for the V95 I mechanism, while those marked(#B) are for the V95 II mechanism.
3. Take note that(#A) and (#B) parts have no interchangeability.

MECHANISM PARTS 1

LOCATION	PARTS NO.	DESCRIPTION
11000	613 142 9574	COMPL,CYLINDER,2N2S-V (VHR-256G,276G,276EV)
OR	613 142 9567	COMPL,CYLINDER,2N2S-V (VHR-256G,276G,276EV)
OR	613 132 0468	COMPL,CYLINDER,2N2S-V (VHR-256G,276G,276EV)
OR	613 142 9529	COMPL,CYLINDER,2N2P-L (VHR-246E,286E,276E)
OR	613 137 5789	COMPL,CYLINDER,2N2P-L (VHR-246E,286E,276E)
11100	613 108 6241	ASSY,CYLINDER,LWR 2AL
OR	613 113 1354	ASSY,CYLINDER,LWR 2AL
11200	613 114 2831	ASSY,CYLINDER,UPR 2N2S-V (VHR-256G,276G,276EV)
OR	613 114 2824	ASSY,CYLINDER,UPR 2N2S-V (VHR-256G,276G,276EV)
OR	613 087 6867	ASSY,CYLINDER,UPR 2N2P-L (VHR-246E,286E,276E)
OR	613 078 8689	ASSY,CYLINDER,UPR 2N2P-L (VHR-246E,286E,276E)
11300	411 038 1608	SCR PAN+W 3X8
12000	613 155 0759	MOUNTING,CYLINDER (#A)
OR	613 159 8980	MOUNTING,CYLINDER (#A)
13000	412 048 8601	SPECIAL SCREW-2.6X7 (#A)
OR	411 047 4805	SCR PAN+FLG 2.6X6 (#A)
21000	613 022 4019	ROTOR,MOTOR CYL
22000	645 008 4454	MOTOR,STATOR,CYL DC 2W
30000	613 081 4036	SPACER,MOTOR
40000	412 036 5001	SPECIAL SCREW 2.3X6
OR	412 036 0808	SPECIAL SCREW 2.3X6
50000	412 036 4905	SPECIAL SCREW 2.3X10
OR	412 036 0709	SPECIAL SCREW 2.3X10
0099	613 152 0578	COMPL,CASSETTE MECHANISM
0100	613 152 0738	STAND,L
0300	613 152 0660	FRAME,UNDER
040B	613 152 0417	SPRING,LID OPENER
040C	613 152 0707	LEVER,RELEASE
040D	613 152 0424	SPRING,TRAY LOCK
0800	613 152 2794	GEAR,LOCK
0900	613 152 2800	GEAR,PINION
1000	613 151 9480	LEVER,DOOR OPENER
1100	613 151 9299	HOLDER,GEAR
6070	411 021 7907	SCR S-TPG BIN 4X12
6073	412 048 8205	SPECIAL SCREW-2.6X6
6102	613 151 6618	PAD
10120	407 162 1102	LED LN59L,(D8003)
10140	407 162 8705	PHOTO DIODE PN263L-(NC)
10150	407 043 0101	PHOTO DIODE ON2170-R
OR	407 165 8108	PHOTO COUPLE SG-105F
10400	412 048 8106	SPECIAL SCREW-2.6X8 (#A)
OR	412 052 6204	SPECIAL SCREW-2.6X5.5 (#B)
20100	613 160 5503	ASSY,REEL SUPPLY
20200	613 160 4193	ASSY,REEL TAKE UP
20210	412 021 5306	SPECIAL WASHER 3.1X6X0.3
OR	412 015 8900	SPECIAL WASHER 3.1X6X0.4
OR	412 015 8504	SPECIAL WASHER 3.1X6X0.5
20300	613 151 8889	COMPL,MOUNTING CLUTCH
20310	412 048 7505	SPECIAL SCREW-2.6X4
20400	613 151 9701	PULLEY,REEL
20410	412 045 4606	SPECIAL WASHER 2.4X6X0.25
20600	613 152 2749	GEAR,REEL S
20700	613 152 2756	GEAR,REEL T
30300	613 160 3356	ASSY,BRAKE SOFT T
30400	613 152 0295	SPRING,SOFT T
30500	613 151 9411	LEVER,SOFT S
30600	613 152 0318	SPRING,SOFT S
30700	613 160 6166	ASSY,BRAKE,S
30800	613 159 2193	ASSY,BRAKE T
30900	613 163 6996	SPRING,BRAKE
31100	613 152 0189	SLIDE,ACT BRAKE T
31700	613 151 8490	ASSY,BRAKE CAPSTAN
31800	613 152 0356	SPRING,BRAKE CAPSTAN
40100	613 151 8759	ASSY,LEVER,BT
40200	613 160 5282	ASSY,BRAKE,BAND
40300	613 152 0271	SPRING,BT
50100	645 008 9749	HEAD,ERASE FULL
50110	412 048 9707	SPECIAL SCREW-2.6X10
50200	645 008 5192	ASSY,HEAD,R/P ACE
50210	412 052 3500	SPECIAL SCREW 2.6X12
5050A	613 151 8858	ASSY,MOUNTING,INCLINE S (#A)
OR	613 164 7237	ASSY,MOUNTING,INCLINE S (#B)
5050B	613 022 0233	ASSY,GUIDE,ROLLER
5050C	412 048 4504	SPECIAL SCREW-2X3
5060A	613 151 8872	ASSY,MOUNTING INCLINE T (#A)
OR	613 164 7251	ASSY,MOUNTING INCLINE T (#B)
5060B	613 022 0233	ASSY,GUIDE,ROLLER
5060C	412 048 4504	SPECIAL SCREW-2X3
50700	613 164 4762	ASSY,LEVER,LOAD
50800	613 152 0387	SPRING,LEVER L GUIDE
50900	412 048 8908	SPECIAL NUT-3X3
51000	613 161 2365	ASSY,LEVER,ACT L GUIDE
51010	412 033 4106	WASHER SLIT 2.6X5X0.50
51100	613 160 7057	MOUNTING,CATCHER (#B)
51110	412 049 1700	SPECIAL SCREW-2.6X10 (#B)
6090A	613 151 9152	GEAR,RACK FRONT
OR	613 160 4636	GEAR,RACK FRONT
6090B	613 151 9114	GEAR,RACK START
6090C	613 152 0226	SPRING,RACK FRONT
60910	412 050 2802	SPECIAL SCREW-2.6X6
61000	613 151 9398	LEVER,EP SW
61100	613 152 3692	SPRING,EP SW
7010A	613 151 8803	ASSY,LEVER,PINCH ROLLER
7010B	613 156 6033	MOUNTING,LIFT PINCH
7010C	613 152 0233	SPRING,PINCH ROLLER
70200	613 156 3841	CAM,LIFT PINCH
70300	613 152 0677	GEAR,CAM PINCH
70400	613 152 0714	MOUNTING,OPENER
70410	412 049 1106	SPECIAL SCREW-2.6X16

(Fig. A) V95 I Mechanism

Note: Parts whose location number are enclosed in oval marks are for the V95 I mechanism.
They are not interchangeable with the V95 II mechanism parts shown in Fig B.

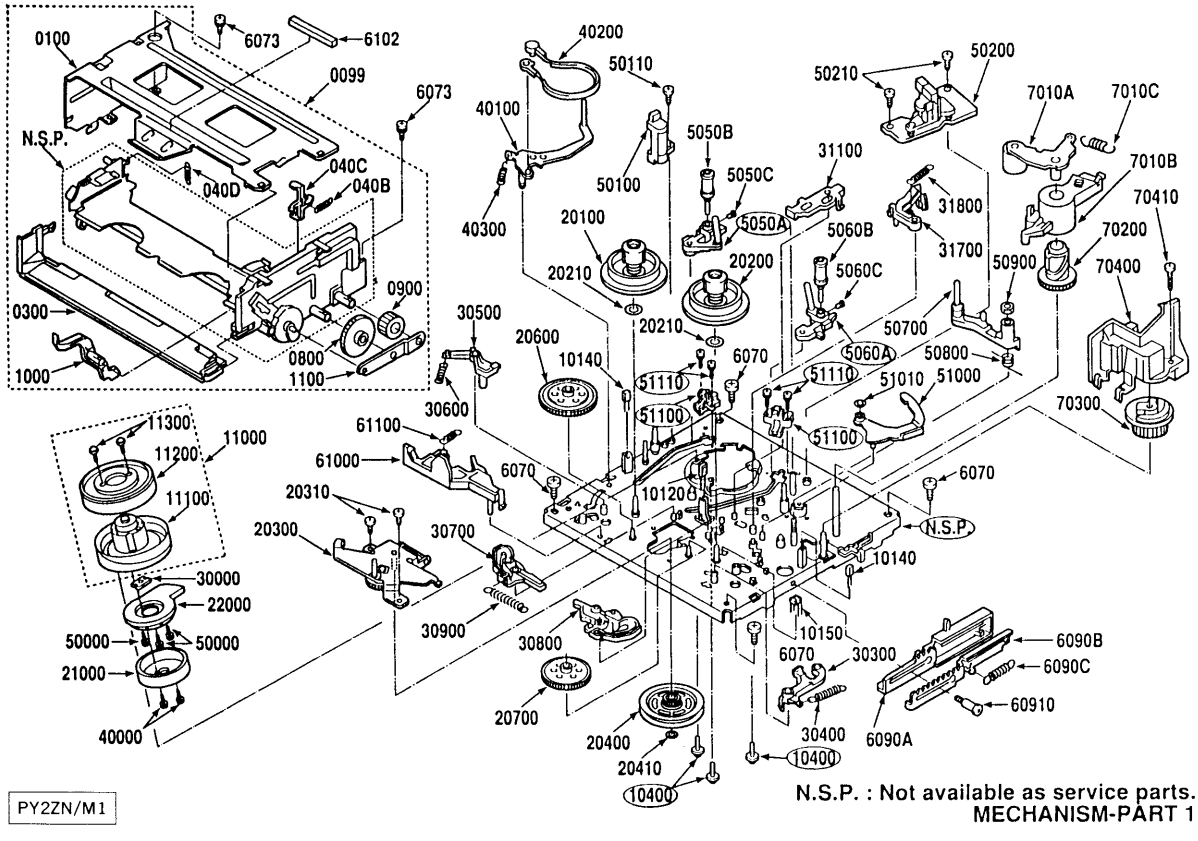


PP2L/E-M1

N.S.P. : Not available as service parts.
MECHANISM-PART 1

(Fig. B) V95 II Mechanism

Note: Parts whose location number are enclosed in oval marks are for the V95 II mechanism.
They are not interchangeable with the V95 I mechanism parts shown in Fig A.



PY2ZN/M1

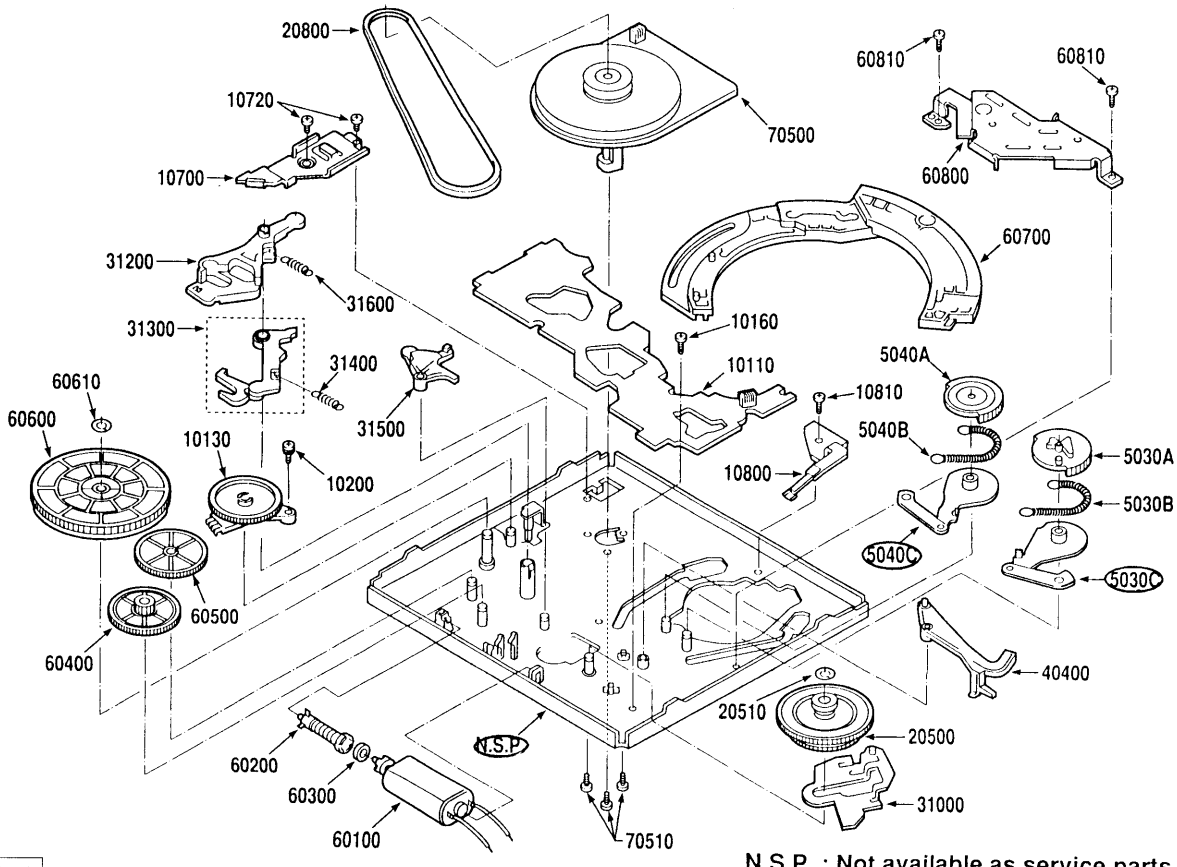
N.S.P. : Not available as service parts.
MECHANISM-PART 1

LOCATION	PARTS NO.	DESCRIPTION
MECHANISM PARTS 2		
10110	613 160 1574	COMPL PWB,MC-1
10130	645 007 1560	SWITCH,MODE
10160	412 048 7505	SPECIAL SCREW-2.6X4
10200	412 048 8304	SPECIAL SCREW-2.6X8
10700	613 153 0836	MOUNTING,HARNESS
10720	412 048 9608	SPECIAL SCREW-2.6X3
10800	613 165 8523	ASSY,EARTH CYL
10810	412 048 8007	SPECIAL SCREW-2.6X6
20500	613 160 4186	ASSY,GEAR,FRICTION
20510	411 109 1605	WASHER Y 2.6X6X0.25
20800	613 151 9039	BELT,REEL
31000	613 152 0165	SLIDE,ACT BRAKE S
31200	613 159 0991	LEVER,CONTROL BRAKE
31300	613 159 0847	COMPL,LEVER,ACT BRAKE
31400	613 152 0332	SPRING,RETURN BRAKE
31500	613 151 9459	LEVER,CHANGE CLUTCH
31600	613 152 0349	SPRING,CHANGE CLUTCH
40400	613 153 7583	ASSY,LEVER SPRING BT

LOCATION	PARTS NO.	DESCRIPTION
5030A	613 152 2763	GEAR,LOAD S
5030B	613 152 0370	SPRING,LOAD S
5030C	613 151 8766	ASSY,LEVER,LOAD S (#A)
OR	613 160 3691	ASSY,LEVER,LOAD S (#B)
5040A	613 152 2770	GEAR,LOAD T
5040B	613 152 0363	SPRING,LOAD T
5040C	613 151 8773	ASSY,LEVER,LOAD T (#A)
OR	613 160 3707	ASSY,LEVER,LOAD T (#B)
60100	645 003 4305	ASSY,MOTOR LOADING
60200	613 151 8599	COMPL,GEAR,WORM
60300	613 151 9107	DAMPER
60400	613 151 9138	GEAR,WHEEL 1
60500	613 160 3790	GEAR,WHEEL 2
60600	613 156 4008	CAM,MAIN
60610	412 051 6700	SPECIAL WASHER 3.6X0.5
60700	613 159 9017	SLIDE,CRESCENT
60800	613 159 8997	MOUNTING,CRESCENT
60810	412 048 8007	SPECIAL SCREW-2.6X6
70500	645 008 1897	MOTOR,CAPSTAN DC 3W
70510	412 048 7604	SPECIAL SCREW-2.6X6

(Fig. C)

Note: Parts whose location number are enclosed in oval marks are not interchangeable between the V95 I mechanism and V95 II mechanism.



PP4/G-M2

N.S.P. : Not available as service parts.

MECHANISM-PART 2

ELECTRICAL PARTS

NOTE;

1. Materials of Capacitors and Resistors are abbreviated as follows;

Resistors

MT-FILM	Metallized Film Resistor
MT-GLAZE	Metallized Glaze Resistor
OXIDE-MT	Oxide Metallized Film Resistor

Capacitors

MT-POLYEST	Metallized Polyester Capacitor
MT-COMPO	Metallized Composite Capacitor
TA-SOLID	Tantalum Solid Capacitor
AL-SOLID	Aluminum Solid Capacitor
NP-ELECT	Non-Polarized Electrolytic Capacitor
OS-SOLID	Aluminum Solid Capacitors with Organic Semiconductive Electrolytic Capacitor
DL-ELECT	Double Layered Electrolytic Capacitor

2. Tolerance of Capacitor(10pF over) and Resistor are noted with follow symboles.
   F ····· ±1% G ····· ±2% J ····· ±5% K ····· ±10%
   M ····· ±20% N ····· ±30% Z ····· +80% ~ −20%
3. Capacitors
   U : uF P : pF
4. Inductors
   UH : uH MH : mH
5. N.S.P. : Not available as service parts.
6. The ceramic capacitors and resistors mounted on the PWB,may be two different types of parts,chip(leadless)type or discrete(with lead wire)type.Therefore,even though the location number is the same,you may encounter either chip or discrete parts on the PWB.

LOCATION	PARTS NO.	DESCRIPTION
COMPL PWB,CP-1-A		
COMPL.NO	613 167 3830	(VHR-256G)
COMPL.NO	613 167 3847	(VHR-246E)
COMPL.NO	613 167 3854	(VHR-286E)
COMPL.NO	613 168 4027	(VHR-276E)
COMPL.NO	613 166 2858	(VHR-276G)
COMPL.NO	613 168 1316	(VHR-276EV)
(SEMICONDUCTORS)		
Q1001	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q1002	405 099 8508	TR 2SC4640S
OR	405 011 8401	TR 2SC1740S-Q
OR	405 093 0607	TR KSC2785-Y
OR	405 099 8607	TR 2SC4640T
OR	405 011 8500	TR 2SC1740S-R
Q1003	405 099 8508	TR 2SC4640S(VHR-246E,286E,276E)
OR	405 011 8401	TR 2SC1740S-Q(VHR-246E,286E,276E)
OR	405 093 0607	TR KSC2785-Y(VHR-246E,286E,276E)
OR	405 099 8607	TR 2SC4640T(VHR-246E,286E,276E)
OR	405 011 8500	TR 2SC1740S-R(VHR-246E,286E,276E)
Q1004	405 018 2501	TR 2SC3399(VHR-246E,286E,276E)
OR	405 000 6104	TR DTC144ES(VHR-246E,286E,276E)
Q1005	405 099 8508	TR 2SC4640S
OR	405 011 8401	TR 2SC1740S-Q
OR	405 093 0607	TR KSC2785-Y
OR	405 099 8607	TR 2SC4640T
OR	405 011 8500	TR 2SC1740S-R
Q1201	405 099 8409	TR 2SA1782T-AC
OR	405 006 1806	TR 2SA933S-R
Q1211	405 099 8508	TR 2SC4640S (VHR-286E,276E,276G,276EV)
OR	405 011 8401	TR 2SC1740S-Q (VHR-286E,276E,276G,276EV)
OR	405 093 0607	TR KSC2785-Y (VHR-286E,276E,276G,276EV)
OR	405 099 8607	TR 2SC4640T (VHR-286E,276E,276G,276EV)
OR	405 011 8500	TR 2SC1740S-R (VHR-286E,276E,276G,276EV)
Q1221	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
Q1221	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q1222	405 064 0100	TR 2SA1561-Q
OR	405 064 0209	TR 2SA1561-R
OR	405 123 6708	TR 2SB1320A-Q
OR	405 123 6807	TR 2SB1320A-R
Q1401	405 099 8201	TR 2SA1782S (VHR-286E,276E,276G,276EV)
OR	405 006 1707	TR 2SA933S-Q (VHR-286E,276E,276G,276EV)
OR	405 093 0508	TR KSA1175-Y (VHR-286E,276E,276G,276EV)
OR	405 099 8409	TR 2SA1782T-AC (VHR-286E,276E,276G,276EV)
OR	405 006 1806	TR 2SA933S-R (VHR-286E,276E,276G,276EV)
Q2001	405 018 0002	TR 2SC3331-S
OR	405 018 0101	TR 2SC3331-T
OR	405 018 0200	TR 2SC3331-U
Q2002	405 063 9708	TR DTC144EL
Q2003	405 063 9302	TR DTA124EL
OR	405 124 2808	TR UN6112
Q3503	405 063 9708	TR DTC144EL(VHR-246E,286E,276E)
Q3504	405 063 9708	TR DTC144EL
Q3553	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q3581	405 063 9708	TR DTC144EL(VHR-246E,286E,276E)
Q5001	405 094 6905	TR 2SK1460
OR	405 126 0208	TR 2SK1460LS
Q5002	405 013 7006	TR 2SC2274-F
OR	405 013 7303	TR 2SC2274K-F
Q5003	405 006 6702	TR 2SA984-F
OR	405 006 7204	TR 2SA984K-F
Q5004	405 013 7006	TR 2SC2274-F
OR	405 013 7303	TR 2SC2274K-F
Q5101	405 089 2103	TR 2SC4483-S
OR	405 089 2202	TR 2SC4483-T
Q5102	405 013 6801	TR 2SC2274-E
OR	405 013 7006	TR 2SC2274-F

LOCATION	PARTS NO.	DESCRIPTION
Q5102	405 013 7303	TR 2SC2274K-F
OR	405 013 7204	TR 2SC2274K-E
Q5103	405 013 6801	TR 2SC2274-E
OR	405 013 7006	TR 2SC2274-F
OR	405 013 7303	TR 2SC2274K-F
OR	405 013 7204	TR 2SC2274K-E
Q6601	405 018 2501	TR 2SC3399(VHR-256G,246E)
OR	405 000 6104	TR DTC144ES(VHR-256G,246E)
Q6921	405 084 8209	TR 2SC2960-F-SPA (VHR-246E,286E,276E)
OR	405 084 8308	TR 2SC2960-G-SPA (VHR-246E,286E,276E)
(INTEGRATED CIRCUITS)		
IC101	409 354 5707	IC LA7436AM-MPB
IC102	409 328 6907	IC LC89970M
IC111	409 120 3401	IC LA7221
IC141	410 255 5208	IC LC74783M-9083 (VHR-286E,276E,276G,276EV)
OR	410 255 5307	IC LC74783M-9095 (VHR-286E,276E,276G,276EV)
IC201	409 262 2409	IC LA7285M
OR	409 340 3403	IC LA7283M
IC301	410 251 6704	IC LC866728A-5A00(VHR-256G,246E)
OR	410 251 4007	IC LC866740A-5998(VHR-286E,276E)
OR	410 251 5103	IC LC866744A-5999(VHR-276G,276EV)
IC302	409 314 2005	IC LB1643
IC303	409 313 0903	IC MN1381-L
OR	409 243 4101	IC MN1380-L
IC351	409 348 8103	IC XLU2899K
OR	409 348 6604	IC BU2899K
IC512	409 225 2309	IC PQ12RF11
IC602	410 177 3801	IC AT24C01A-10PC(VHR-256G,246E)
OR	409 348 3702	IC XL24C01AP(VHR-256G,246E)
OR	410 172 6708	IC X24C01APC7284(VHR-256G,246E)
OR	410 189 5602	IC 24LC01B/P(VHR-256G,246E)
OR	410 177 3603	IC AT24C02-10PC(VHR-286E,276E)
OR	409 348 6802	IC XL24C02P(VHR-286E,276E)
OR	410 172 6807	IC X24C02PC7189(VHR-286E,276E)
OR	410 189 5701	IC 24LC02B/P(VHR-286E,276E)
OR	410 177 3702	IC AT24C04-10PC(VHR-276G,276EV)
OR	409 348 6901	IC XL24C04P(VHR-276G,276EV)
OR	410 172 6906	IC X24C04PC7346(VHR-276G,276EV)
OR	410 189 5800	IC 24LC04B/P(VHR-276G,276EV)
IC692	409 026 8203	IC L5631(VHR-246E,286E,276E)
OR	409 057 5103	IC UPC574J(VHR-246E,286E,276E)
(DIODES)		
D1004	407 007 9904	DIODE GMA01(VHR-256G,246E)
OR	407 012 4406	DIODE 1SS133(VHR-256G,246E)
D1005	407 007 9904	DIODE GMA01(VHR-256G,246E)
OR	407 012 4406	DIODE 1SS133(VHR-256G,246E)
D1101	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1102	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1201	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1202	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1221	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133

LOCATION	PARTS NO.	DESCRIPTION
D3001	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3101	407 012 4406	DIODE 1SS133(VHR-256G ONLY)
OR	407 007 9904	DIODE GMA01(VHR-256G ONLY)
D3102	407 012 4406	DIODE 1SS133(VHR-246E,286E,276E)
OR	407 007 9904	DIODE GMA01(VHR-246E,286E,276E)
D3115	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3116	407 012 4406	DIODE 1SS133(VHR-246E,286E,276E)
OR	407 007 9904	DIODE GMA01(VHR-246E,286E,276E)
D3121	407 012 4406	DIODE 1SS133(VHR-276G,276EV)
OR	407 007 9904	DIODE GMA01(VHR-276G,276EV)
D3122	407 012 4406	DIODE 1SS133(VHR-286E,276E)
OR	407 007 9904	DIODE GMA01(VHR-286E,276E)
D3502	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D5001	407 134 8900	DIODE DBC10G
D5003	407 078 2705	DIODE 1SS244
D5010	407 091 6704	DIODE AP01C
D5101	407 169 5707	DIODE RL2Z-LF-C4
OR	407 160 9308	DIODE ERB93-02L3
D5102	407 169 5707	DIODE RL2Z-LF-C4
OR	407 160 9308	DIODE ERB93-02L3
D5103	407 078 2705	DIODE 1SS244
D5104	407 078 2705	DIODE 1SS244
D5105	407 100 6909	DIODE AG01
OR	407 091 6902	DIODE ERA38-04
D5106	407 063 8903	ZENER DIODE MTZJ5.6C
D5107	407 063 8903	ZENER DIODE MTZJ5.6C
D5108	407 063 8903	ZENER DIODE MTZJ5.6C
D5109	407 099 6706	ZENER DIODE MTZJ13A
D5110	407 004 9709	DIODE DSK10C
OR	407 005 8701	DIODE ERA15-02
D5130	407 144 4107	ZENER DIODE MTZJ2.7A
D6910	407 100 0006	ZENER DIODE MTZJ33C (VHR-256G,276G,276EV)
(CRYSTAL DEVICES)		
X1001	645 000 6012	OSC,CRYSTAL 4.433619MHZ
OR	645 000 6029	OSC,CRYSTAL 4.433619MHZ
OR	645 002 4436	OSC,CRYSTAL 4.433619MHZ
X1401	613 002 8709	CRYSTAL 17.734475MHZ (VHR-286E,276E,276G,276EV)
OR	613 127 1555	OSC,CRYSTAL 17.734475MHZ (VHR-286E,276E,276G,276EV)
X3001	645 008 8360	OSC,CERAMIC 8.500MHZ
OR	645 007 8460	OSC,CERAMIC 8.500MHZ
X3002	613 109 0972	OSC,CRYSTAL 32KHZ
OR	645 004 1938	OSC,CRYSTAL 32.768KHZ
(VARIABLE RESISTORS)		
VR201	645 003 5548	VR,SEMI,100K N
OR	645 001 8787	VR,SEMI,100K N
OR	645 006 5439	VR,SEMI,100K N
VR351	645 006 5538	VR,SEMI,220K N
OR	645 003 5593	VR,SEMI,220K N
OR	645 003 5166	VR,SEMI,220K N
(INDUCTORS)		
L1001	645 001 4574	INDUCTOR 100U J
OR	645 003 7917	INDUCTOR,100U J
L1002	645 002 1435	INDUCTOR 150U J
OR	645 011 1556	INDUCTOR,150U J
L1003	645 002 1428	INDUCTOR 15U J

LOCATION	PARTS NO.	DESCRIPTION
L1003	645 003 7955	INDUCTOR,15U J
L1005	645 001 5472	INDUCTOR 33U J
OR	645 003 8105	INDUCTOR,33U J
L1201	645 008 7400	CORE,BEAD
L2002	645 009 0417	INDUCTOR,10.0M J
L3001	645 009 3791	CORE,BEAD
L3004	645 009 3791	CORE,BEAD
L5001 ⚠	645 013 5620	LINE FILTER
L5010	645 006 3602	INDUCTOR,1.1UH
L5101	645 006 3602	INDUCTOR,1.1UH
L5102	645 006 3602	INDUCTOR,1.1UH
L5103	645 009 3791	CORE,BEAD
L6008	645 001 4550	INDUCTOR 10U K(VHR-246E,286E,276E)
OR	645 003 7900	INDUCTOR,10U K(VHR-246E,286E,276E)
L6009	645 003 6910	INDUCTOR,10U J
L6602	645 001 4550	INDUCTOR 10U K
OR	645 003 7900	INDUCTOR,10U K
L6604	645 006 3886	INDUCTOR,1U K
OR	645 005 3856	INDUCTOR,1U M
(TRANSFORMERS)		
T2001	613 098 6023	TRANS,OSC 70KHZ
OR	621 019 9596	70KHZ OSC TRANS
OR	645 004 7480	TRANS,OSC,70KHZ
T5001 ⚠	645 009 0011	TRANS,POWER,PULSE
(CAPACITORS)		
C1001	403 121 9509	CERAMIC 0.1U Z 50V
C1002	403 120 9609	CERAMIC 0.047U J 16V
C1003	403 001 1906	CERAMIC 0.01U M 16V
C1004	403 121 9509	CERAMIC 0.1U Z 50V
C1005	403 001 1906	CERAMIC 0.01U M 16V
C1006	403 001 1906	CERAMIC 0.01U M 16V
C1007	403 073 2702	CERAMIC 390P J 50V
C1008	403 120 9005	CERAMIC 0.022U J 16V
C1010	403 120 9609	CERAMIC 0.047U J 16V
C1011	403 001 1906	CERAMIC 0.01U M 16V
C1012	403 071 1509	CERAMIC 180P J 50V
C1013	403 217 5507	CERAMIC 0.1U J 16V
C1014	403 001 1906	CERAMIC 0.01U M 16V
C1015	403 001 1906	CERAMIC 0.01U M 16V
C1016	403 001 1906	CERAMIC 0.01U M 16V
C1017	403 001 1906	CERAMIC 0.01U M 16V
C1018	403 001 1906	CERAMIC 0.01U M 16V
C1019	403 001 1906	CERAMIC 0.01U M 16V
C1020	403 001 1906	CERAMIC 0.01U M 16V
C1021	403 001 1906	CERAMIC 0.01U M 16V
C1023	403 189 2405	ELECT 10U M 16V
C1024	403 163 7907	ELECT 47U M 6.3V
C1025	403 109 6308	ELECT 1U M 50V
C1026	403 107 9905	ELECT 10U M 16V
C1027	403 191 8709	ELECT 1U M 50V
C1028	403 163 7907	ELECT 47U M 6.3V
C1029	403 163 7907	ELECT 47U M 6.3V
C1030	403 191 8709	ELECT 1U M 50V
C1031	403 191 8709	ELECT 1U M 50V
C1032	403 191 8709	ELECT 1U M 50V
C1034	403 009 1809	CERAMIC 10P J 50V (VHR-246E,286E,276E)
C1036	403 217 5507	CERAMIC 0.1U J 16V (VHR-246E,286E,276E)
C1037	403 074 8703	CERAMIC 680P J 50V
C1038	403 017 9705	CERAMIC 22P J 50V
C1039	403 075 3103	CERAMIC 82P J 50V
C1040	403 019 9703	CERAMIC 27P J 50V
C1042	403 222 1105	CERAMIC 0.047U Z 16V
C1043	403 001 1906	CERAMIC 0.01U M 16V
C1045	403 072 7500	CERAMIC 330P J 50V
C1052	403 222 1105	CERAMIC 0.047U Z 16V
C1054	403 109 6308	ELECT 1U M 50V
C1055	403 135 4002	ELECT 47U M 6.3V
C1056	403 109 6308	ELECT 1U M 50V
C1057	403 150 6500	ELECT 22U M 16V
C1058	403 189 2405	ELECT 10U M 16V
C1059	403 191 8709	ELECT 1U M 50V
C1060	403 017 9705	CERAMIC 22P J 50V
C1061	403 001 1906	CERAMIC 0.01U M 16V
C1065	403 075 3103	CERAMIC 82P J 50V
C1101	403 130 2904	ELECT 0.47U M 50V
C1102	403 107 9905	ELECT 10U M 16V
C1103	403 222 1105	CERAMIC 0.047U Z 16V
C1201	403 135 4101	ELECT 470U M 6.3V
C1202	403 121 9509	CERAMIC 0.1U Z 50V
C1211	403 022 7703	CERAMIC 33P J 50V (VHR-286E,276E,276G,276EV)
C1401	403 012 4002	CERAMIC 15P J 50V (VHR-286E,276E,276G,276EV)
C1402	403 012 4002	CERAMIC 15P J 50V (VHR-286E,276E,276G,276EV)
C1403	403 191 8709	ELECT 1U M 50V (VHR-286E,276E,276G,276EV)
C1404	403 001 1906	CERAMIC 0.01U M 16V (VHR-286E,276E,276G,276EV)
C1405	403 135 4002	ELECT 47U M 6.3V (VHR-286E,276E,276G,276EV)
C2002	403 069 0309	CERAMIC 1000P J 50V
C2004	403 163 7907	ELECT 47U M 6.3V
C2005	403 150 0201	CERAMIC 0.018U K 16V
C2009	403 121 2401	ELECT 22U M 16V
C2010	403 150 6500	ELECT 22U M 16V
C2013	403 002 8201	CERAMIC 0.015U J 25V
C2016	403 167 7002	ELECT 4.7U M 50V
C2017	403 107 9905	ELECT 10U M 16V
C2019	403 134 9602	ELECT 47U M 16V
C2020	403 071 6207	CERAMIC 220P K 50V
C2021	403 082 4209	POLYPRO 6800P J 100V
C2022	403 001 1906	CERAMIC 0.01U M 16V
C2024	403 001 1906	CERAMIC 0.01U M 16V
C2031	403 121 9509	CERAMIC 0.1U Z 50V
C2032	403 121 9509	CERAMIC 0.1U Z 50V
C2051	403 070 4105	CERAMIC 120P K 50V
C2071	403 069 0309	CERAMIC 1000P J 50V (VHR-246E,286E,276E)
C2072	403 191 8808	ELECT 2.2U M 50V (VHR-246E,286E,276E)
C2073	403 003 2406	CERAMIC 0.022U J 25V (VHR-246E,286E,276E)
C2091	403 121 9509	CERAMIC 0.1U Z 50V
C2092	403 001 5102	CERAMIC 2200P M 16V
C2107	403 069 0309	CERAMIC 1000P J 50V
C2109	403 001 8905	CERAMIC 6800P M 16V
C3001	403 016 8907	CERAMIC 20P J 50V
C3002	403 016 8907	CERAMIC 20P J 50V
C3004	403 001 1906	CERAMIC 0.01U M 16V
C3005	403 001 1906	CERAMIC 0.01U M 16V
C3008	403 150 6500	ELECT 22U M 16V
C3009	403 001 1906	CERAMIC 0.01U M 16V
C3011	403 121 9509	CERAMIC 0.1U Z 50V
C3012	403 001 1906	CERAMIC 0.01U M 16V
C3014	403 135 4101	ELECT 470U M 6.3V
C3016	403 001 1906	CERAMIC 0.01U M 16V

LOCATION	PARTS NO.	DESCRIPTION
C3017	403 069 1207	CERAMIC 1000P K 50V (VHR-246E,286E,276E)
C3020	403 001 1906	CERAMIC 0.01U M 16V (VHR-246E,286E,276E)
C3021	403 026 2209	CERAMIC 47P J 50V
C3022	403 305 4801	DL-ELECT 0.1F Z 5.5V (VHR-286E,276G,276EV)
C3034	403 001 1906	CERAMIC 0.01U M 16V
C3501	403 129 9709	CERAMIC 0.015U K 16V
C3502	403 001 8806	CERAMIC 6800P K 16V
C3503	403 129 9709	CERAMIC 0.015U K 16V
C3504	403 228 8207	ELECT 22U M 16V
C3505	403 228 8207	ELECT 22U M 16V
C3506	403 001 8806	CERAMIC 6800P K 16V
C3507	403 150 6500	ELECT 22U M 16V
C3508	403 150 6500	ELECT 22U M 16V
C3509	403 163 7907	ELECT 47U M 6.3V
C3511	403 071 6207	CERAMIC 220P K 50V
C3512	403 061 3407	POLYESTER 0.039U J 50V
C3513	403 119 6701	CERAMIC 0.068U K 16V
C3514	403 175 1009	MT-POLYEST 0.15U J 50V
C3515	403 059 6205	POLYESTER 0.022U K 50V
C3516	403 001 5003	CERAMIC 2200P K 16V
C3517	403 001 3801	CERAMIC 1500P K 16V
C3522	403 069 1207	CERAMIC 1000P K 50V
C3523	403 191 8709	ELECT 1U M 50V
C3524	403 001 1906	CERAMIC 0.01U M 16V
C3525	403 130 2904	ELECT 0.47U M 50V
C3526	403 063 7205	POLYESTER 0.082U J 50V
C3530	403 135 4002	ELECT 47U M 6.3V
C3536	403 193 7601	ELECT 220U M 6.3V
C3540	403 068 9402	CERAMIC 100P K 50V
C3551	403 175 0903	MT-POLYEST 0.12U J 50V (VHR-256G,276G,276EV)
OR	403 168 6202	MT-POLYEST 0.33U J 50V (VHR-246E,286E,276E)
C3552	403 028 3402	CERAMIC 56P J 50V
C3553	403 191 8709	ELECT 1U M 50V
C3554	403 070 7205	CERAMIC 150P J 50V
C3556	403 069 1207	CERAMIC 1000P K 50V
C3558	403 149 0700	ELECT 33U M 16V
C3570	403 121 9509	CERAMIC 0.1U Z 50V
C3571	403 121 9509	CERAMIC 0.1U Z 50V
C3581	403 184 9805	MT-POLYEST 0.22U J 50V (VHR-246E,286E,276E)
C5001 ⚠	404 070 4201	MT-POLYEST 0.068U M 250V
C5002 ⚠	404 070 4201	MT-POLYEST 0.068U M 250V
C5005 ⚠	404 067 4900	CERAMIC 1000P M 400V
C5007 ⚠	404 067 4900	CERAMIC 1000P M 400V
C5010	403 249 0204	ELECT 47U M 400V
C5011	403 057 3107	POLYESTER 0.1U K 50V
C5012	403 073 6205	CERAMIC 470P J 50V
C5015	403 076 0507	CERAMIC 2200P K 500V
C5022	403 076 2402	CERAMIC 3300P K 500V
C5025	403 255 8409	CERAMIC 39P J 1K
C5101	403 243 8206	ELECT 2200U M 6.3V
C5102	403 147 9200	ELECT 1000U M 6.3V
C5103	403 207 5005	ELECT 470U M 16V
C5104	403 218 3106	ELECT 1000U M 16V
C5105	403 228 8900	ELECT 100U M 50V
C5106	403 228 9600	ELECT 47U M 35V
C5107	403 243 7803	ELECT 220U M 6.3V
C5111	403 134 6007	ELECT 330U M 16V
C5112	403 107 9905	ELECT 10U M 16V
C5113	403 135 7805	ELECT 3.3U M 50V
C5114	403 107 9905	ELECT 10U M 16V
C5115	403 135 7805	ELECT 3.3U M 50V
C5116	403 189 2405	ELECT 10U M 16V
C6004	403 168 6103	MT-POLYEST 0.1U J 50V (VHR-246E,286E,276E)
C6005	403 121 9509	CERAMIC 0.1U Z 50V (VHR-246E,286E,276E)
C6007	403 107 9905	ELECT 10U M 16V
C6008	403 228 6401	CERAMIC 0.033U Z 16V
C6009	403 134 9602	ELECT 47U M 16V
C6010	403 071 7501	CERAMIC 2200P K 50V (VHR-246E,286E,276E)
C6018	403 121 9509	CERAMIC 0.1U Z 50V
C6601	403 107 9905	ELECT 10U M 16V
C6602	403 107 9905	ELECT 10U M 16V
C6917	403 014 2501	CERAMIC 18P J 50V
C6922	403 193 8905	ELECT 22U M 50V
C6924	403 071 2001	CERAMIC 180P K 50V (VHR-246E,286E,276E)
C6925	403 168 6202	MT-POLYEST 0.33U J 50V (VHR-246E,286E,276E)
C6926	403 184 9805	MT-POLYEST 0.22U J 50V (VHR-246E,286E,276E)
(RESISTORS)		
R1001	401 023 2703	CARBON 8.2K JA 1/4W
R1002	401 014 5102	CARBON 15K JA 1/4W
R1003	401 012 6903	CARBON 10K JA 1/4W
R1004	401 022 1806	CARBON 680 JA 1/4W
R1005	401 017 1705	CARBON 2.7K JA 1/4W
R1006	401 015 2605	CARBON 1.8K JA 1/4W
R1007	401 012 5609	CARBON 1K JA 1/4W
R1008	401 012 5609	CARBON 1K JA 1/4W
R1009	401 016 3700	CARBON 2.2K JA 1/4W
R1010	401 013 5202	CARBON 1.2K JA 1/4W
R1011	401 020 1907	CARBON 4.7K JA 1/4W
R1012	401 012 5609	CARBON 1K JA 1/4W
R1013	401 012 5609	CARBON 1K JA 1/4W
R1014	401 015 2605	CARBON 1.8K JA 1/4W
R1015	401 023 3601	CARBON 82K JA 1/4W
R1016	401 012 5609	CARBON 1K JA 1/4W
R1017	401 012 5609	CARBON 1K JA 1/4W
R1018	401 014 4006	CARBON 1.5K JA 1/4W (VHR-246E,286E,276E)
R1020	401 018 3708	CARBON 3.3K JA 1/4W
R1021	401 022 3008	CARBON 6.8K JA 1/4W
R1022	401 012 6903	CARBON 10K JA 1/4W
R1024	401 012 5609	CARBON 1K JA 1/4W (VHR-246E,286E,276E)
R1029	401 016 2505	CARBON 220 JA 1/4W
R1030	401 023 1607	CARBON 820 JA 1/4W
R1032	401 018 2701	CARBON 330 JA 1/4W
R1035	401 012 6903	CARBON 10K JA 1/4W (VHR-246E,286E,276E)
R1037	401 012 4404	CARBON 100 JA 1/4W
R1038	401 012 5609	CARBON 1K JA 1/4W
R1043	401 014 4006	CARBON 1.5K JA 1/4W (VHR-256G,246E)
R1101	401 018 2701	CARBON 330 JA 1/4W
R1102	401 019 0904	CARBON 390 JA 1/4W
R1103	401 012 5609	CARBON 1K JA 1/4W
R1104	401 012 5609	CARBON 1K JA 1/4W
R1202	401 022 6702	CARBON 75 JA 1/4W
R1203	401 022 6702	CARBON 75 JA 1/4W
R1204	401 017 0708	CARBON 270 JA 1/4W (VHR-256G,246E)
OR	401 021 1807	CARBON 560 JA 1/4W (VHR-286E,276E,276G,276EV)
R1205	401 016 2505	CARBON 220 JA 1/4W (VHR-256G,246E)

LOCATION	PARTS NO.	DESCRIPTION
R1206	401 016 2505	CARBON 220 JA 1/4W
R1211	401 013 5202	CARBON 1.2K JA 1/4W
		(VHR-286E,276E,276G,276EV)
R1213	401 013 5202	CARBON 1.2K JA 1/4W
		(VHR-286E,276E,276G,276EV)
R1215	401 012 5609	CARBON 1K JA 1/4W
		(VHR-286E,276E,276G,276EV)
R1218	401 022 0700	CARBON 68 JA 1/4W
		(VHR-286E,276E,276G,276EV)
R1221	401 012 6903	CARBON 10K JA 1/4W
R1222	401 012 6903	CARBON 10K JA 1/4W
R1223	401 021 2903	CARBON 5.6K JA 1/4W
R1224	401 021 2903	CARBON 5.6K JA 1/4W
R1225	401 021 0602	CARBON 56 JA 1/4W
R1226	401 012 4404	CARBON 100 JA 1/4W
R1229	401 020 1907	CARBON 4.7K JA 1/4W
R1401	401 012 5609	CARBON 1K JA 1/4W
		(VHR-286E,276E,276G,276EV)
R1499	401 015 1509	CARBON 180 JA 1/4W
		(VHR-256G,246E)
R2001	401 012 4404	CARBON 100 JA 1/4W
R2002	401 017 1705	CARBON 2.7K JA 1/4W
R2003	401 022 0700	CARBON 68 JA 1/4W
R2004	401 019 3905	CARBON 390K JA 1/4W
R2005	401 021 8905	CARBON 6.2K JA 1/4W
R2009	401 012 9201	CARBON 1M JA 1/4W
R2010	401 015 3701	CARBON 18K JA 1/4W
R2011	401 012 6903	CARBON 10K JA 1/4W
R2012	401 015 3701	CARBON 18K JA 1/4W
R2013	401 022 3008	CARBON 6.8K JA 1/4W
R2014	401 013 5202	CARBON 1.2K JA 1/4W
R2018	401 016 4707	CARBON 22K JA 1/4W
R2021	401 018 1506	CARBON 33 JA 1/4W
R2022	401 019 9501	CARBON 47 JA 1/4W
R2023	401 014 5102	CARBON 15K JA 1/4W
R2024	401 019 6104	CARBON 4.7 JA 1/4W
R2025	401 020 2805	CARBON 47K JA 1/4W
R2026	401 018 4804	CARBON 33K JA 1/4W
R2031	401 019 2908	CARBON 39K JA 1/4W
R2032	401 013 6308	CARBON 12K JA 1/4W
R2033	401 019 2908	CARBON 39K JA 1/4W
R2034	401 012 6903	CARBON 10K JA 1/4W
R2071	401 023 0600	CARBON 82 JA 1/4W
		(VHR-246E,286E,276E)
R2085	401 013 6308	CARBON 12K JA 1/4W
R2091	401 017 1705	CARBON 2.7K JA 1/4W
R2107	401 017 1705	CARBON 2.7K JA 1/4W
R2108	401 017 1705	CARBON 2.7K JA 1/4W
R2109	401 021 1807	CARBON 560 JA 1/4W
R2123	401 020 0702	CARBON 470 JA 1/4W
R3001 ⚠	402 067 7402	FUSIBLE RES 3.3 JA 1/2W
R3004	401 014 4006	CARBON 1.5K JA 1/4W
R3008	401 020 1907	CARBON 4.7K JA 1/4W
R3009	401 012 6903	CARBON 10K JA 1/4W
R3011	401 020 2805	CARBON 47K JA 1/4W
R3013	401 020 1907	CARBON 4.7K JA 1/4W
R3014	401 014 9001	CARBON 16K JA 1/4W
R3015	401 014 9001	CARBON 16K JA 1/4W
R3018	401 022 3008	CARBON 6.8K JA 1/4W
R3019	401 015 3701	CARBON 18K JA 1/4W
R3022	401 012 8006	CARBON 100K JA 1/4W
		(VHR-246E,286E,276E)
R3023	401 012 5609	CARBON 1K JA 1/4W
R3024	401 012 5609	CARBON 1K JA 1/4W
R3025	401 012 5609	CARBON 1K JA 1/4W
R3026	401 012 5609	CARBON 1K JA 1/4W
R3032	401 018 4804	CARBON 33K JA 1/4W
R3034	401 013 6308	CARBON 12K JA 1/4W
R3035	401 012 6903	CARBON 10K JA 1/4W
R3036	401 016 3700	CARBON 2.2K JA 1/4W
R3047	401 015 2605	CARBON 1.8K JA 1/4W
R3048	401 013 5202	CARBON 1.2K JA 1/4W
R3049	401 017 1705	CARBON 2.7K JA 1/4W
R3050	401 016 4707	CARBON 22K JA 1/4W
R3051	401 016 4707	CARBON 22K JA 1/4W
R3083	401 012 5609	CARBON 1K JA 1/4W
		(VHR-256G,276G,276EV)
R3084	401 012 5609	CARBON 1K JA 1/4W
		(VHR-256G,276G,276EV)
R3101	401 012 6903	CARBON 10K JA 1/4W
R3102	401 012 6903	CARBON 10K JA 1/4W
R3103	401 012 6903	CARBON 10K JA 1/4W
R3104	401 012 6903	CARBON 10K JA 1/4W
R3501	401 012 8006	CARBON 100K JA 1/4W
R3502	401 012 8006	CARBON 100K JA 1/4W
R3503	401 018 5702	CARBON 330K JA 1/4W
R3504	401 014 6000	CARBON 150K JA 1/4W
R3505	401 014 5102	CARBON 15K JA 1/4W
R3506	401 016 5704	CARBON 220K JA 1/4W
R3507	401 014 6000	CARBON 150K JA 1/4W
R3508	401 017 2702	CARBON 27K JA 1/4W
		(VHR-256G,276G,276EV)
OR	401 020 2805	CARBON 47K JA 1/4W
		(VHR-246E,286E,276E)
R3516	401 012 6903	CARBON 10K JA 1/4W
R3517	401 020 2805	CARBON 47K JA 1/4W
R3518	401 020 2805	CARBON 47K JA 1/4W
R3520	401 019 3905	CARBON 390K JA 1/4W
R3521	401 012 6903	CARBON 10K JA 1/4W
R3525	401 012 5609	CARBON 1K JA 1/4W
R3526	401 016 3700	CARBON 2.2K JA 1/4W
R3527	401 012 5609	CARBON 1K JA 1/4W
R3528	401 020 7800	CARBON 510 JA 1/4W
R3529	401 020 7800	CARBON 510 JA 1/4W
R3533	401 014 4006	CARBON 1.5K JA 1/4W
		(VHR-246E,286E,276E)
R3537	401 023 2703	CARBON 8.2K JA 1/4W
R3546	401 020 1907	CARBON 4.7K JA 1/4W
R3547	401 014 5102	CARBON 15K JA 1/4W
R3549	401 012 6903	CARBON 10K JA 1/4W
R3550	401 023 2703	CARBON 8.2K JA 1/4W
R3556	401 012 6903	CARBON 10K JA 1/4W
R3557	401 018 5702	CARBON 330K JA 1/4W
R3558	401 020 0702	CARBON 470 JA 1/4W
R3560	401 012 5609	CARBON 1K JA 1/4W
R3581	401 021 4006	CARBON 56K JA 1/4W
		(VHR-246E,286E,276E)
R3590	401 012 5609	CARBON 1K JA 1/4W
R3591	401 012 5609	CARBON 1K JA 1/4W
R5001	402 013 9108	SOLID 2.7M KB 1/2W
R5010	401 017 3709	CARBON 270K JA 1/4W
R5011	401 017 3709	CARBON 270K JA 1/4W
R5012	401 015 4609	CARBON 180K JA 1/4W
R5013	401 017 0708	CARBON 270 JA 1/4W
R5014	401 012 6903	CARBON 10K JA 1/4W
R5020	401 071 2403	OXIDE-MT 15K JA 3W
R5101	401 021 7007	CARBON 6.8 JA 1/4W
R5102	401 017 1705	CARBON 2.7K JA 1/4W
R5103	401 023 6206	CARBON 9.1 JA 1/4W
R5104	401 020 2805	CARBON 47K JA 1/4W
R5105	401 017 0708	CARBON 270 JA 1/4W
R5106	401 021 1807	CARBON 560 JA 1/4W
R5108	401 020 1907	CARBON 4.7K JA 1/4W
R5109	401 020 1907	CARBON 4.7K JA 1/4W

LOCATION	PARTS NO.	DESCRIPTION
R5110 ⚠	402 071 3100	FUSIBLE RES 27 JA 1/4W
R6001	401 019 3905	CARBON 390K JA 1/4W
R6002	401 017 3709	CARBON 270K JA 1/4W
R6003	401 012 8006	CARBON 100K JA 1/4W
		(VHR-246E,286E,276E)
R6004	401 013 7206	CARBON 120K JA 1/4W
		(VHR-246E,286E,276E)
R6006	401 018 3708	CARBON 3.3K JA 1/4W
R6009	401 020 1907	CARBON 4.7K JA 1/4W
R6071 ⚠	402 042 0701	FUSIBLE RES 680 GA 1/4W
R6691	401 012 5609	CARBON 1K JA 1/4W
R6692	401 016 3700	CARBON 2.2K JA 1/4W
R6917	401 019 2908	CARBON 39K JA 1/4W
		(VHR-256G,276G,276EV)
OR	401 017 2702	CARBON 27K JA 1/4W
		(VHR-246E,286E,276E)
R6921	401 018 4804	CARBON 33K JA 1/4W
		(VHR-246E,286E,276E)
R6922	401 012 6903	CARBON 10K JA 1/4W
		(VHR-246E,286E,276E)
R6923	401 012 6903	CARBON 10K JA 1/4W
		(VHR-246E,286E,276E)
R6924	401 015 3701	CARBON 18K JA 1/4W
		(VHR-246E,286E,276E)
R6925	401 014 5102	CARBON 15K JA 1/4W
		(VHR-246E,286E,276E)
R6926	401 013 6308	CARBON 12K JA 1/4W
		(VHR-246E,286E,276E)
R6927	401 013 4106	CARBON 120 JA 1/4W
		(VHR-246E,286E,276E)
(FUSE)		
F5001 ⚠	423 021 8402	FUSE 250V 2.5A
(PROTECTOR)		
PR511 ⚠	645 005 9834	PROTECTOR,IC 1.0A 50V
(CONNECTORS)		
CN121	613 111 5712	SOCKET,21P
OR	645 002 4528	SOCKET,RGB 21P
OR	645 003 1656	SOCKET,RGB 21P
CN501 ⚠	645 000 5411	SOCKET,INLET AC
(MISCELLANEOUS)		
	613 053 8048	FIXER
⚠	645 008 7677	HOLDER,FUSE,F5001
OR ⚠	645 008 7660	HOLDER,FUSE,F5001

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COMPL PWB,VP-1

COMPL.NO	613 167 0983	(VHR-256G,276G,276EV)
COMPL.NO	613 167 3311	(VHR-246E)
COMPL.NO	613 167 3328	(VHR-286E,276E)
(SEMICONDUCTORS)		
Q1902	405 015 9701	TR 2SC2814-F4
OR	405 015 9909	TR 2SC2814-F5
OR	405 035 6100	TR 2SC2413K-Q
Q1903	405 015 9701	TR 2SC2814-F4
OR	405 015 9909	TR 2SC2814-F5
OR	405 035 6100	TR 2SC2413K-Q
Q1904	405 015 8407	TR 2SC2812-L5
OR	405 015 8704	TR 2SC2812-L6
OR	405 014 4509	TR 2SC2412K-R
OR	405 014 4608	TR 2SC2412K-S

LOCATION	PARTS NO.	DESCRIPTION
(INTEGRATED CIRCUIT)		
IC181	409 348 1005	IC LA7411
(INDUCTORS)		
L1851	645 001 5489	INDUCTOR 33U K
OR	645 003 8112	INDUCTOR,33U K
L1852	645 001 4666	INDUCTOR 220U K
OR	645 003 8044	INDUCTOR,220U K
L1853	645 001 4666	INDUCTOR 220U K
OR	645 003 8044	INDUCTOR,220U K
L1901	645 001 4550	INDUCTOR 10U K
OR	645 003 7900	INDUCTOR,10U K
L1903	645 001 5519	INDUCTOR 47U K
OR	645 010 2172	INDUCTOR,47U K
L1904	645 003 8426	INDUCTOR,27U K
OR	645 003 8068	INDUCTOR,27U K
L1905	645 001 4635	INDUCTOR 15U K
OR	645 003 7962	INDUCTOR,15U K
(CAPACITORS)		
C1808	403 068 0409	CERAMIC 0.1U Z 25V
C1812	403 068 0409	CERAMIC 0.1U Z 25V
C1813	403 069 5601	CERAMIC 0.01U K 50V
C1814	403 068 0409	CERAMIC 0.1U Z 25V
C1815	403 284 9408	OS-SOLID 3.3U M 16V
C1817	403 068 0409	CERAMIC 0.1U Z 25V
C1819	403 069 5601	CERAMIC 0.01U K 50V
C1820	403 069 5601	CERAMIC 0.01U K 50V
C1822	403 069 5601	CERAMIC 0.01U K 50V
C1823	403 069 5601	CERAMIC 0.01U K 50V
C1851	403 010 8606	CERAMIC 12P J 50V
C1853	403 009 5807	CERAMIC 100P J 50V
C1854	403 014 9302	CERAMIC 180P J 50V
C1857	403 014 3508	CERAMIC 18P J 50V
		(VHR-256G,276G,276EV)
OR	403 018 0602	CERAMIC 22P J 50V
		(VHR-246E,286E,276E)
C1861	403 068 0409	CERAMIC 0.1U Z 25V
C1901	403 069 5601	CERAMIC 0.01U K 50V
C1902	403 022 8304	CERAMIC 33P J 50V
C1905	403 022 8304	CERAMIC 33P J 50V
C1906	403 026 2902	CERAMIC 47P J 50V
C1907	403 028 4201	CERAMIC 56P J 50V
C1911	403 068 0409	CERAMIC 0.1U Z 25V
(RESISTORS)		
R1805	401 038 9308	MT-GLAZE 68K JA 1/10W
R1806	401 037 5707	MT-GLAZE 100K JA 1/10W
R1808	401 037 8005	MT-GLAZE 15K JA 1/10W
R1814	401 037 7909	MT-GLAZE 1.5K JA 1/10W
		(VHR-256G,276G,276EV)
OR	401 037 9200	MT-GLAZE 1.8K JA 1/10W
		(VHR-246E,286E,276E)
R1817	401 038 0800	MT-GLAZE 22K JA 1/10W
R1851	401 037 9200	MT-GLAZE 1.8K JA 1/10W
		(VHR-256G,276G,276EV)
OR	401 038 0701	MT-GLAZE 2.2K JA 1/10W
		(VHR-246E,286E,276E)
R1852	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R1854	401 037 5400	MT-GLAZE 1K JA 1/10W
R1902	401 038 7601	MT-GLAZE 560 JA 1/10W
R1903	401 038 0800	MT-GLAZE 22K JA 1/10W
R1904	401 038 0800	MT-GLAZE 22K JA 1/10W
R1905	401 038 5003	MT-GLAZE 390 JA 1/10W
R1906	401 038 5003	MT-GLAZE 390 JA 1/10W
R1907	401 037 5400	MT-GLAZE 1K JA 1/10W

LOCATION	PARTS NO.	DESCRIPTION
R1908	401 039 0304	MT-GLAZE 820 JA 1/10W
R1909	401 038 3504	MT-GLAZE 330 JA 1/10W
R1910	401 038 6307	MT-GLAZE 470 JA 1/10W
R1911	401 037 5400	MT-GLAZE 1K JA 1/10W
R1912	401 038 2002	MT-GLAZE 270 JA 1/10W
(JUMPERS)		
J1811	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1861	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1862	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1864	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
(MISCELLANEOUS)		
	613 134 3054	PAD SID FOR CORD,POWER (VHR-246E,286E,276E)

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COMPL PWB,TM-1

COMPL.NO	613 160 8030	
(DIODES)		
D7101	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D7102	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D7103	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D7104	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
(CAPACITOR)		
C7101	403 043 8802	ELECT 4.7U M 16V
(SWITCHES)		
S7101	645 001 9777	SWITCH,PUSH 1P-1T,POWER
OR	645 006 2797	SWITCH,PUSH 1P-1T,POWER
OR	645 008 8049	SWITCH,PUSH 1P-1T,POWER
OR	645 011 5165	SWITCH,PUSH 1P-1T,POWER
OR	645 011 5172	SWITCH,PUSH 1P-1T,POWER
S7102	645 001 9777	SWITCH,PUSH 1P-1T,STOP/EJECT
OR	645 006 2797	SWITCH,PUSH 1P-1T,STOP/EJECT
OR	645 008 8049	SWITCH,PUSH 1P-1T,STOP/EJECT
OR	645 011 5165	SWITCH,PUSH 1P-1T,STOP/EJECT
OR	645 011 5172	SWITCH,PUSH 1P-1T,STOP/EJECT
S7103	645 001 9777	SWITCH,PUSH 1P-1T,CH-UP
OR	645 006 2797	SWITCH,PUSH 1P-1T,CH-UP
OR	645 008 8049	SWITCH,PUSH 1P-1T,CH-UP
OR	645 011 5165	SWITCH,PUSH 1P-1T,CH-UP
OR	645 011 5172	SWITCH,PUSH 1P-1T,CH-UP
S7104	645 001 9777	SWITCH,PUSH 1P-1T,CH-DOWN
OR	645 006 2797	SWITCH,PUSH 1P-1T,CH-DOWN
OR	645 008 8049	SWITCH,PUSH 1P-1T,CH-DOWN
OR	645 011 5165	SWITCH,PUSH 1P-1T,CH-DOWN
OR	645 011 5172	SWITCH,PUSH 1P-1T,CH-DOWN
S7106	645 001 9777	SWITCH,PUSH 1P-1T,PAUSE
OR	645 006 2797	SWITCH,PUSH 1P-1T,PAUSE
OR	645 008 8049	SWITCH,PUSH 1P-1T,PAUSE
OR	645 011 5165	SWITCH,PUSH 1P-1T,PAUSE
OR	645 011 5172	SWITCH,PUSH 1P-1T,PAUSE
S7107	645 001 9777	SWITCH,PUSH 1P-1T,REW
OR	645 006 2797	SWITCH,PUSH 1P-1T,REW
OR	645 008 8049	SWITCH,PUSH 1P-1T,REW
OR	645 011 5165	SWITCH,PUSH 1P-1T,REW
OR	645 011 5172	SWITCH,PUSH 1P-1T,REW
S7108	645 001 9777	SWITCH,PUSH 1P-1T,PLAY
OR	645 006 2797	SWITCH,PUSH 1P-1T,PLAY
OR	645 008 8049	SWITCH,PUSH 1P-1T,PLAY
OR	645 011 5165	SWITCH,PUSH 1P-1T,PLAY
S7108	645 011 5172	SWITCH,PUSH 1P-1T,PLAY
S7109	645 001 9777	SWITCH,PUSH 1P-1T,FF
OR	645 006 2797	SWITCH,PUSH 1P-1T,FF
OR	645 008 8049	SWITCH,PUSH 1P-1T,FF
OR	645 011 5165	SWITCH,PUSH 1P-1T,FF
OR	645 011 5172	SWITCH,PUSH 1P-1T,FF
S7110	645 001 9777	SWITCH,PUSH 1P-1T,REC
OR	645 006 2797	SWITCH,PUSH 1P-1T,REC
OR	645 008 8049	SWITCH,PUSH 1P-1T,REC
OR	645 011 5165	SWITCH,PUSH 1P-1T,REC
OR	645 011 5172	SWITCH,PUSH 1P-1T,REC
(REMOTE RECEIVERS)		
RR711	645 006 8720	UNIT,IR RECEIVER PACK
OR	613 129 0938	IR RECEIVER PACK UNIT
OR	645 008 7875	UNIT,IR RECEIVER PACK
(DISPLAYS)		
A7101	645 004 0597	FLUORESCENT TUBE
OR	645 004 0603	FLUORESCENT TUBE
(MISCELLANEOUS)		
	613 139 2267	HOLDER FL
	613 163 1700	HOLDER IR

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COMPL PWB,TM-7(OPTION)

COMPL.NO	613 165 1722	(VHR-276E)
(INTEGRATED CIRCUIT)		
IC771	409 327 9909	IC MV1821C
(CRISTAL DEVICE)		
X7701	645 004 6797	OSC,CRYSTAL 6.9375MHZ
(CAPACITORS)		
C7701	403 191 8709	ELECT 1U M 50V
C7702	403 159 1001	CERAMIC 0.22U Z 16V
C7703	403 237 7901	MT-COMPO 0.22U J 50V
C7705	403 020 0409	CERAMIC 27P J 50V
C7706	403 020 0409	CERAMIC 27P J 50V
C7708	403 068 0409	CERAMIC 0.1U Z 25V
(RESISTORS)		
R7702	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R7703	401 016 1409	CARBON 22 JA 1/4W

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COMPL PCB,TM-8

COMPL.NO	613 134 4730	(VHR-256G,276G)
(INTEGRATED CIRCUITS)		
IC781	409 148 5104	IC SDA5642(VHR-256G,276G)
OR	409 338 8809	IC SDA5642-5(VHR-256G,276G)
(CAPACITORS)		
C7802	403 013 3103	CERAMIC 150P J 50V (VHR-256G,276G)
C7803	403 256 4608	MT-COMPO 0.33U J 50V (VHR-256G,276G)
C7804	403 057 2407	POLYESTER 0.1U J 50V (VHR-256G,276G)
(RESISTORS)		
R7805	401 038 0701	MT-GLAZE 2.2K JA 1/10W (VHR-256G,276G)

LOCATION	PARTS NO.	DESCRIPTION
R7806	401 037 5806	MT-GLAZE 1M JA 1/10W (VHR-256G,276G)
R7807	401 039 0601	MT-GLAZE 820K JA 1/10W (VHR-256G,276G)
R7808	401 037 5707	MT-GLAZE 100K JA 1/10W (VHR-256G,276G)
R7809	401 037 5608	MT-GLAZE 10K JA 1/10W (VHR-256G,276G)
R7810	401 037 7008	MT-GLAZE 1.2M JA 1/10W (VHR-256G,276G)
R7811	401 037 5202	MT-GLAZE 100 JA 1/10W (VHR-256G,276G)
R7812	401 038 7700	MT-GLAZE 5.6K JA 1/10W (VHR-256G,276G)

****

CŌMPL PCB,TM-9

COMPL.NO	613 158 5751	(VHR-286E,276EV)

(INTEGRATED CIRCUIT)

IC771	409 340 9600	IC SDA5649(VHR-286E,276EV)

(CAPACITŌRS)

C7701	403 060 7505	POLYESTER 0.033U J 50V (VHR-286E,276EV)
C7702	403 071 8102	CERAMIC 2200P K 50V (VHR-286E,276EV)
C7703	403 256 4608	MT-COMPO 0.33U J 50V (VHR-286E,276EV)
C7704	403 013 3004	CERAMIC 150P J 50V (VHR-286E,276EV)
C7705	403 068 0409	CERAMIC 0.1U Z 25V (VHR-286E,276EV)

(RESISTŌRS)

R7701	401 038 9209	MT-GLAZE 6.8K JA 1/10W (VHR-286E,276EV)
R7702	401 037 7008	MT-GLAZE 1.2M JA 1/10W (VHR-286E,276EV)
R7703	401 038 9209	MT-GLAZE 6.8K JA 1/10W (VHR-286E,276EV)
R7704	401 037 7008	MT-GLAZE 1.2M JA 1/10W (VHR-286E,276EV)
R7705	401 037 5806	MT-GLAZE 1M JA 1/10W (VHR-286E,276EV)
R7706	401 038 0701	MT-GLAZE 2.2K JA 1/10W (VHR-286E,276EV)
R7707	401 037 5707	MT-GLAZE 100K JA 1/10W (VHR-286E,276EV)
R7708	401 037 5608	MT-GLAZE 10K JA 1/10W (VHR-286E,276EV)

****

CŌMPL PWB,PM-1

COMPL.NO	613 160 3615	

(INTEGRATED CIRCUIT)

IC541	409 344 6509	IC UPC1093T

(DIŌDES)

D5301	407 169 5608	PHOTO COUPLE PC123U2
D5303	407 148 7609	DIODE DAN217-T146

(CAPACITŌRS)

C5301	403 130 3109	CERAMIC 0.047U K 50V
C5303	403 070 2606	CERAMIC 0.1U Z 50V
C5401	403 130 3109	CERAMIC 0.047U K 50V
C5402	403 069 1702	CERAMIC 1000P K 50V

(RESISTŌRS)

R5301	401 037 5400	MT-GLAZE 1K JA 1/10W
R5302	401 038 7809	MT-GLAZE 56K JA 1/10W
R5303	401 037 5608	MT-GLAZE 10K JA 1/10W
R5307	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R5401	401 038 3504	MT-GLAZE 330 JA 1/10W
R5402	401 038 7601	MT-GLAZE 560 JA 1/10W
R5403	401 038 7601	MT-GLAZE 560 JA 1/10W
R5404	401 038 5102	MT-GLAZE 3.9K JA 1/10W
R5405	401 038 2101	MT-GLAZE 2.7K JA 1/10W
R5406	401 038 3504	MT-GLAZE 330 JA 1/10W
R5407	401 038 2101	MT-GLAZE 2.7K JA 1/10W

****

CŌMPL PWB,MC-1

COMPL.NO	613 160 1574	

(CAPACITŌR)

C8001	403 121 9509	CERAMIC 0.1U Z 50V

(RESISTŌRS)

R8001	401 016 4707	CARBON 22K JA 1/4W
R8002	401 012 6903	CARBON 10K JA 1/4W
R8003	401 017 0708	CARBON 270 JA 1/4W
R8004	401 014 2804	CARBON 150 JA 1/4W

(SWITCHES)

S8002	645 003 4589	SWITCH,EP 1P-1T
OR	645 009 3388	SWITCH,EP 1P-1T

(MISCELLANEŌUS)

1011J	613 152 4002	SPACER,MC1

****

FLEXIBLE FLAT CABLE

	645 008 9992	FLEXIBLE FLAT CABLE CN301-S711

****

ACCESSŌRIES

	645 014 5551	REMOCON,INFRARED(WITH COVER BATTERY)(VHR-256G ONLY)
OR	645 014 5568	REMOCON,INFRARED(WITH COVER BATTERY)(VHR-246E ONLY)
OR	645 014 5810	REMOCON,INFRARED(WITH COVER BATTERY)(VHR-286E ONLY)
OR	645 015 8148	REMOCON,INFRARED(WITH COVER BATTERY)(VHR-276E ONLY)
OR	645 014 6282	REMOCON,INFRARED(WITH COVER BATTERY)(VHR-276G ONLY)
OR	645 013 0083	REMOCON,INFRARED(WITH COVER BATTERY)(VHR-276EV ONLY)
	613 169 4385	COVER BATTERY(FOR REMOCON) (VHR-256G,246E,276E,276G)
OR	613 163 3933	COVER BATTERY(FOR REMOCON) (VHR-286E,276EV)
	613 167 3267	INSTRUCTION MANUAL(VHR-256G ONLY)
OR	613 167 3274	INSTRUCTION MANUAL(VHR-246E ONLY)
OR	613 167 3281	INSTRUCTION MANUAL(VHR-286E ONLY)
OR	613 169 6211	INSTRUCTION MANUAL(VHR-276E ONLY)
OR	613 165 5614	INSTRUCTION MANUAL(VHR-276G ONLY)
OR	613 167 8071	INSTRUCTION MANUAL(VHR-276EV ONLY)
	613 077 4415	CABLE,ANT

LOCATION		PARTS NO.	DESCRIPTION
OR		613 132 6125	CABLE,ANT
OR		645 003 1182	CABLE,ANT PAL
OR		645 003 3711	CABLE,ANT PAL
OR		645 009 4569	CABLE,ANT PAL
	⚠	613 095 0550	CORD,POWER(VHR-256G,276G,276EV)
OR	⚠	613 133 2393	CORD,POWER(VHR-256G,276G,276EV)
OR	⚠	645 002 6805	CORD,POWER(VHR-256G,276G,276EV)
OR	⚠	645 003 3766	CORD,POWER(VHR-256G,276G,276EV)
OR	⚠	613 136 6411	CORD,POWER(VHR-246E,286E,276E)
OR	⚠	645 011 4335	CORD,POWER(VHR-246E,286E,276E)

SANYO Electric Co., Ltd.
Osaka, Japan

Dec./'95/2700 NS Printed in Japan

VHR-256G VHR-246E
VHR-276G VHR-286E
VHR-276EV VHR-276E

BLOCK DIAGRAMS,CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS

TABLE OF CONTENTS

Page

1. OVERALL WIRING, MECHANISM CONNECTION, & BLOCK DIAGRAMS

OVERALL WIRING 1
MECHANISM CONNECTION 3
VIDEO CIRCUIT 4
SYSTEM CONTROL & SERVO CIRCUIT 7
AUDIO CIRCUIT 10

2. CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS (P.W.B.)

CP-1 P.W.B. 11
CP-1 BOARD (PW-A) POWER SUPPLY 13
PW-1 BOARD POWER SUPPLY 15
PW-1 P.W.B. 15
CP-1 BOARD (VD-A) VIDEO(VHR-256G & VHR-246E) 16
VIDEO CIRCUIT WAVEFORMS 18
CP-1 BOARD (VD-A) VIDEO(VHR-276G, VHR-276EV, VHR-286E & VHR-276E) 19
TM-7 BOARD PDC(OPTION BOARD FOR THE MODEL VHR-276E) 21
TM-7 P.W.B. (OPTION BOARD FOR THE MODEL VHR-276E) 21
CP-1 BOARD (AD-A) AUDIO 22
VP-1 BOARD VIDEO PRE-AMP 23
VP-1 P.W.B. 24
CP-1 BOARD (SY-A) SYSTEM CONTROL(VHR-276G, VHR-256G & VHR-276EV) 25
TM-8 BOARD VPS(VHR-276G & VHR-256G) 27
TM-8 P.W.B. (VHR-276G & VHR-256G) 27
TM-9 BOARD VPS/PDC(VHR-286E & VHR-276EV) 27
TM-9 P.W.B. (VHR-286E & VHR-276EV) 27
IC301 SYSTEM CONTROL,TIMER, & TUNING CONTROL MPU PIN FUNCTIONS TABLE 28
CP-1 BOARD (SY-A) SYSTEM CONTROL(VHR-246E, VHR-286E & VHR-276E) 29
CP-1 BOARD (SV-A) SERVO 31
SERVO CIRCUIT WAVEFORMS 33
TM-1 BOARD OPERATION KEY & DISPLAY 34
TM-1 P.W.B. 34
A7101 DISPLAY (FLD) GRID/ANODE ASSIGNMENT DRAWING & TABLE 36
CP-1 BOARD (TN-A) TUNER IF CONNECTION (VHR-276G, VHR-256G & VHR-276EV) 37
CP-1 BOARD (TN-A) TUNER IF CONNECTION (VHR-246E, VHR-286E & VHR-276E) 39

NOTES:

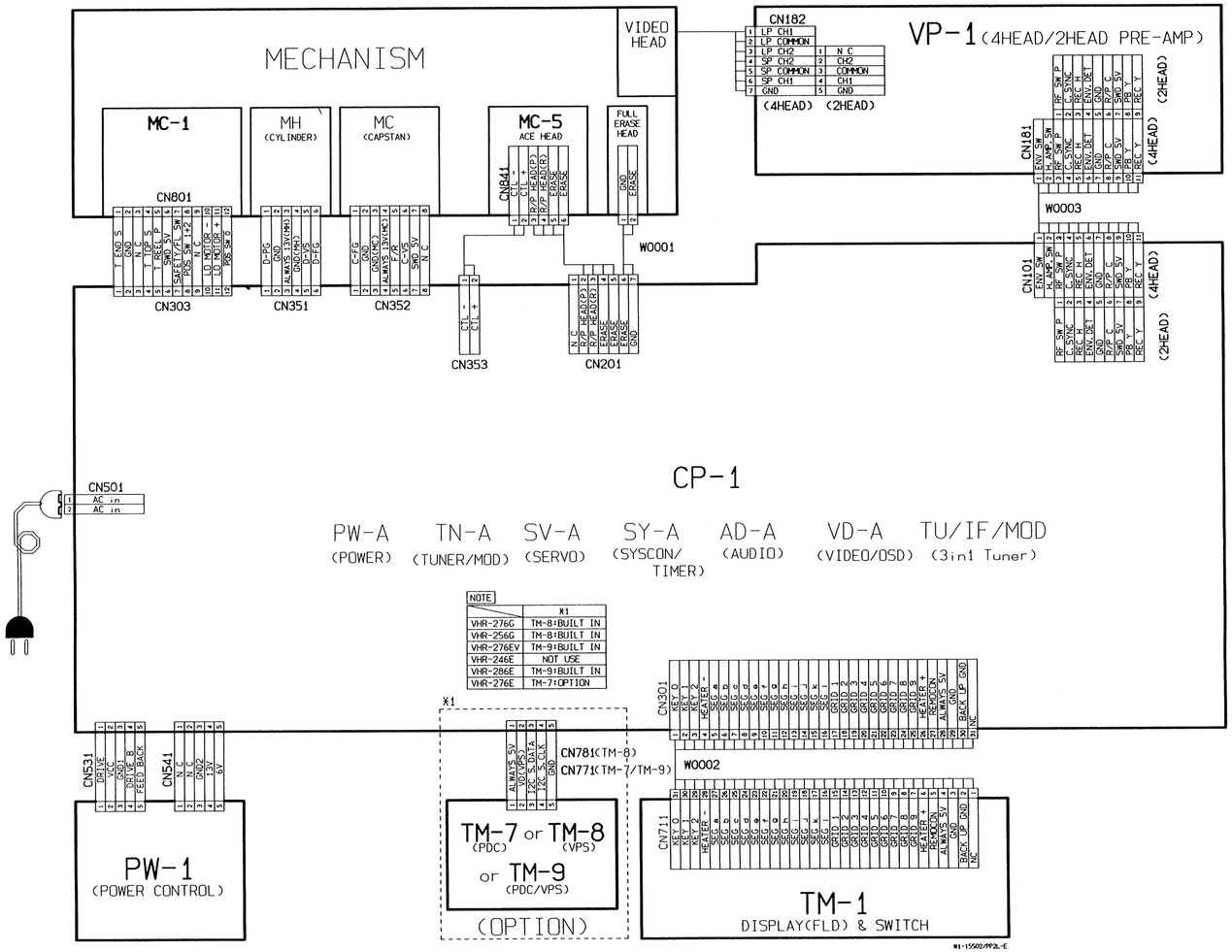
1. All resistance values in "OHMS" unless otherwise noted.
   (K=1,000 ; M=1,000,000)
2. All capacitance values in "μF" unless otherwise noted.
   p=pico farad ; μ ,u or U=micro farad
3. All inductance values in "μH" unless otherwise noted.
   μ ,u or U=micro henry ; m=milli henry

PRODUCT SAFETY NOTICE

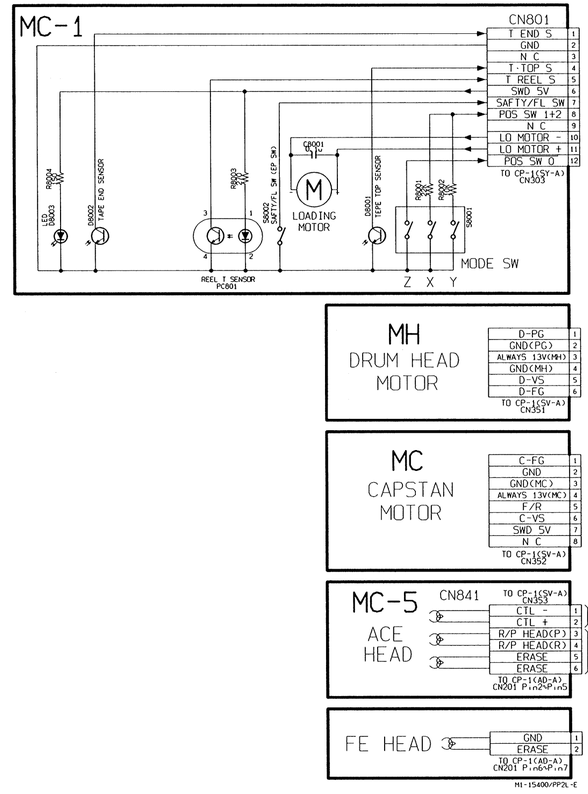
THE COMPONENTS DESIGNATED BY A SYMBOL (⚠) IN THIS SCHEMATIC DIAGRAM DESIGNATES COMPONENTS WHOSE VALUE ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY.
SHOULD ANY COMPONENT DESIGNATED BY A SYMBOL NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST.
DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

1. OVERALL WIRING,MECHANISM CONNECTION, & BLOCK DIAGRAMS

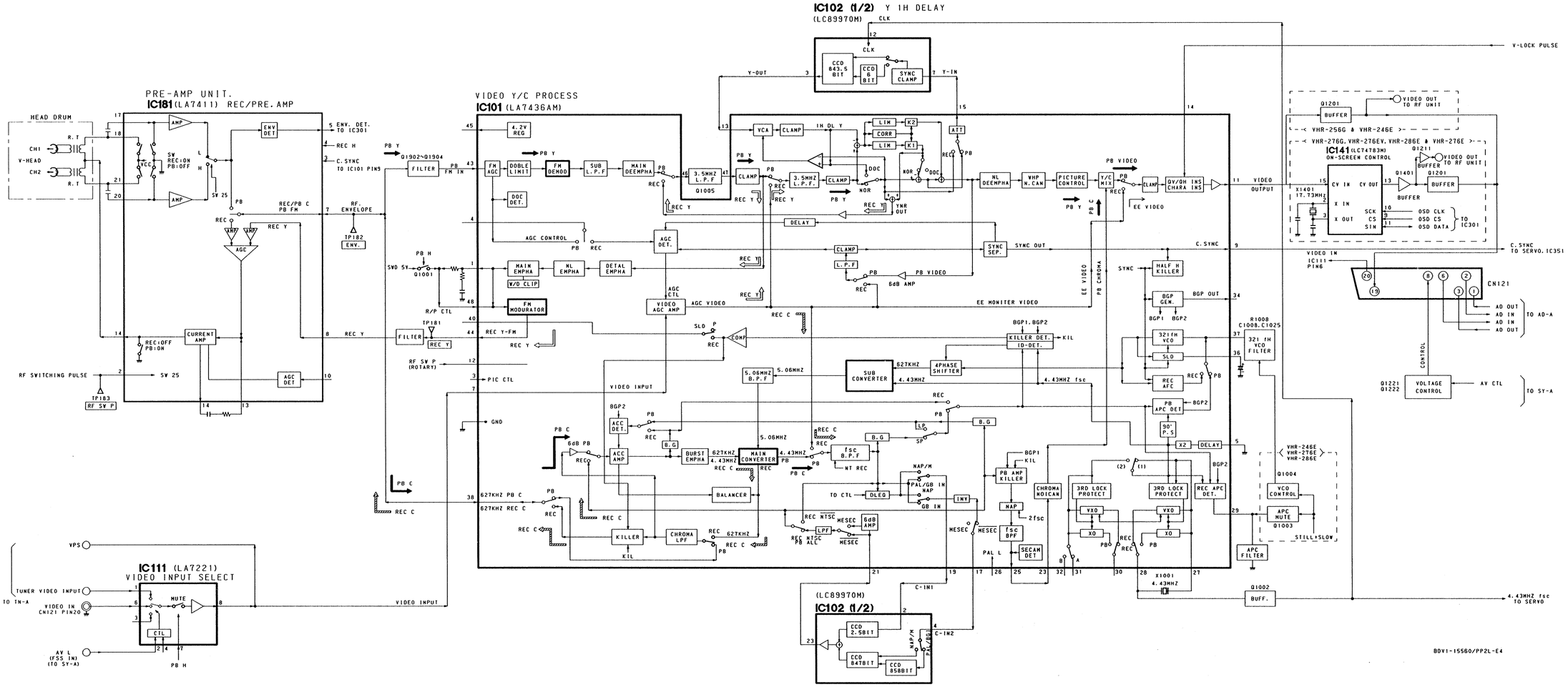
OVERALL WIRING



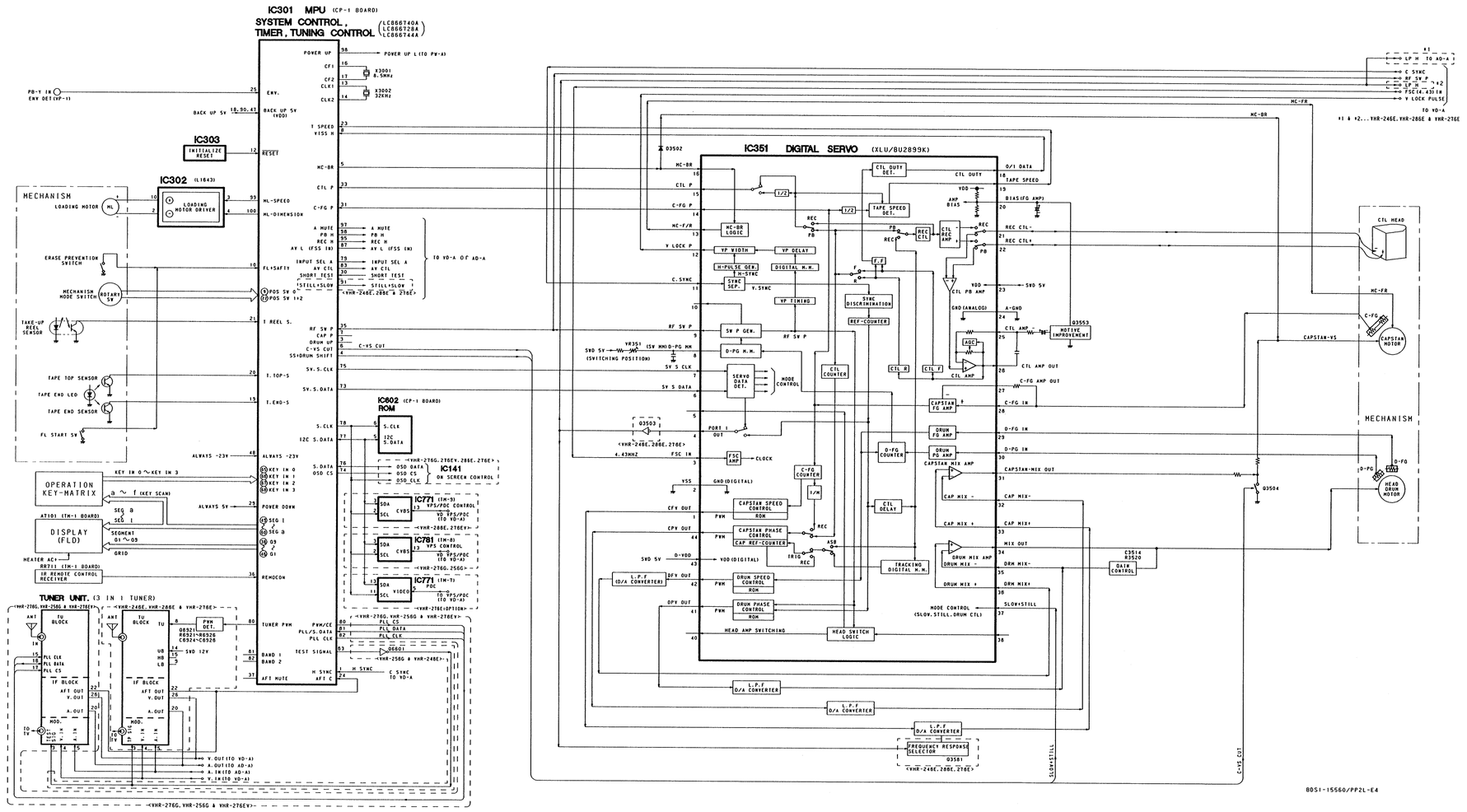
MECHANISM CONNECTION



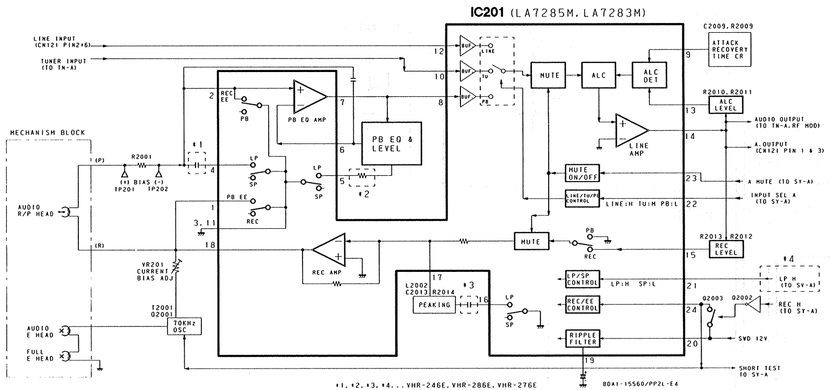
VIDEO CIRCUIT

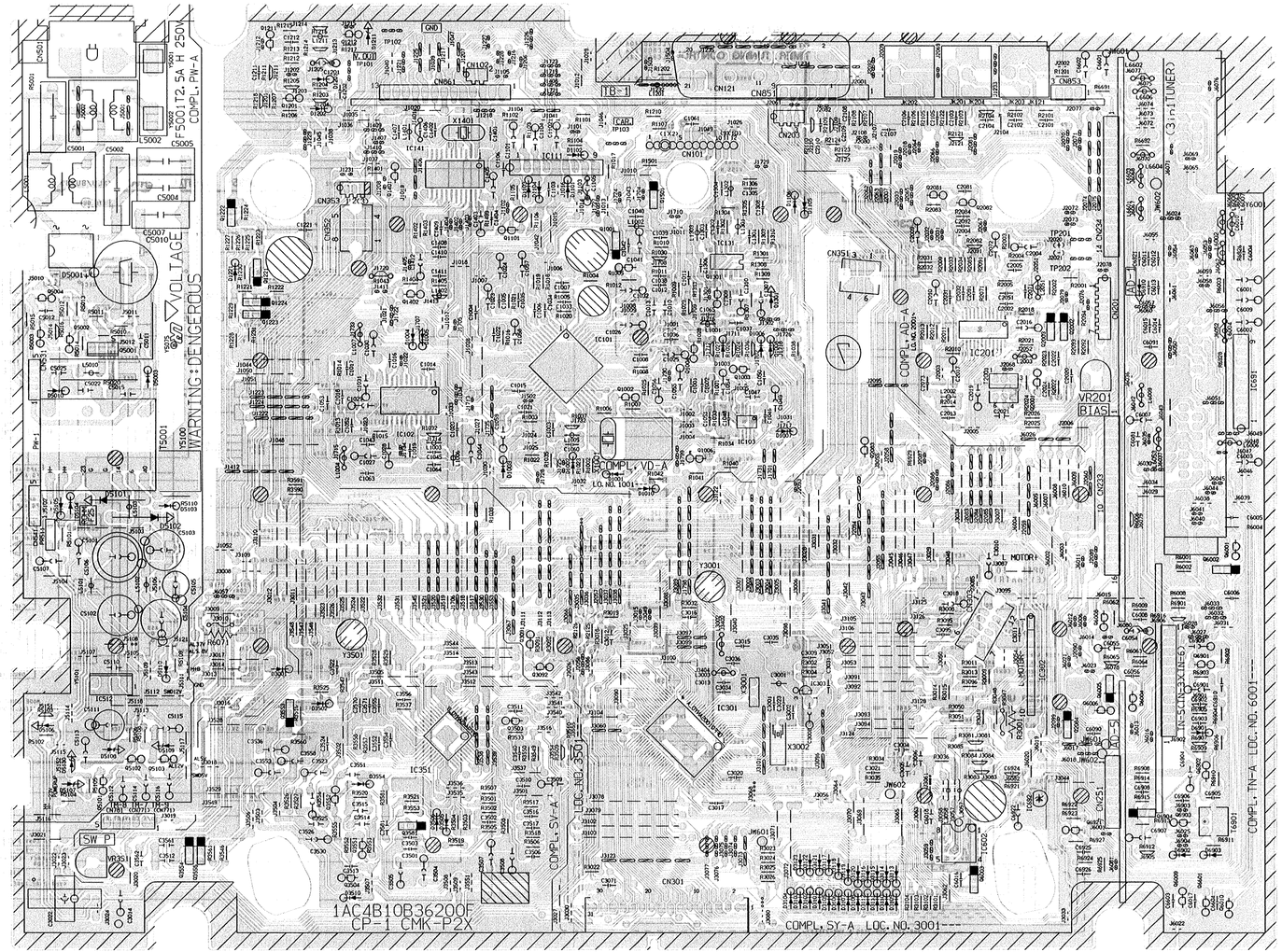


SYSTEM CONTROL & SERVO CIRCUIT

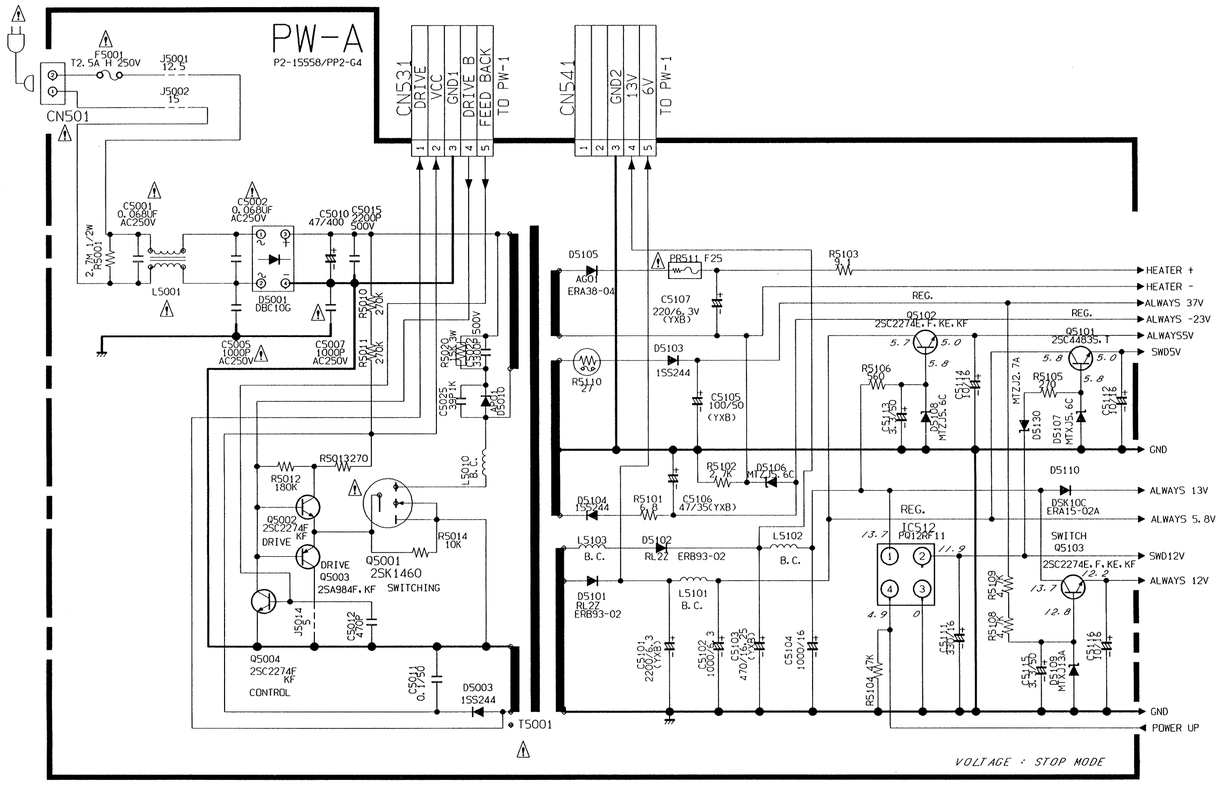


AUDIO CIRCUIT

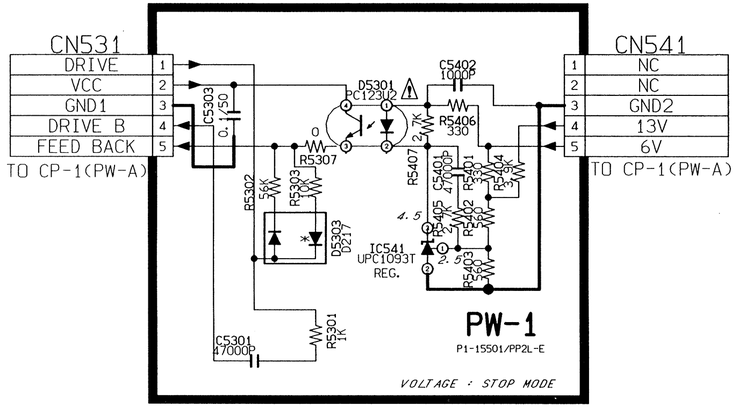




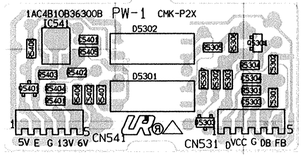
CP-1 BOARD (PW-A) POWER SUPPLY



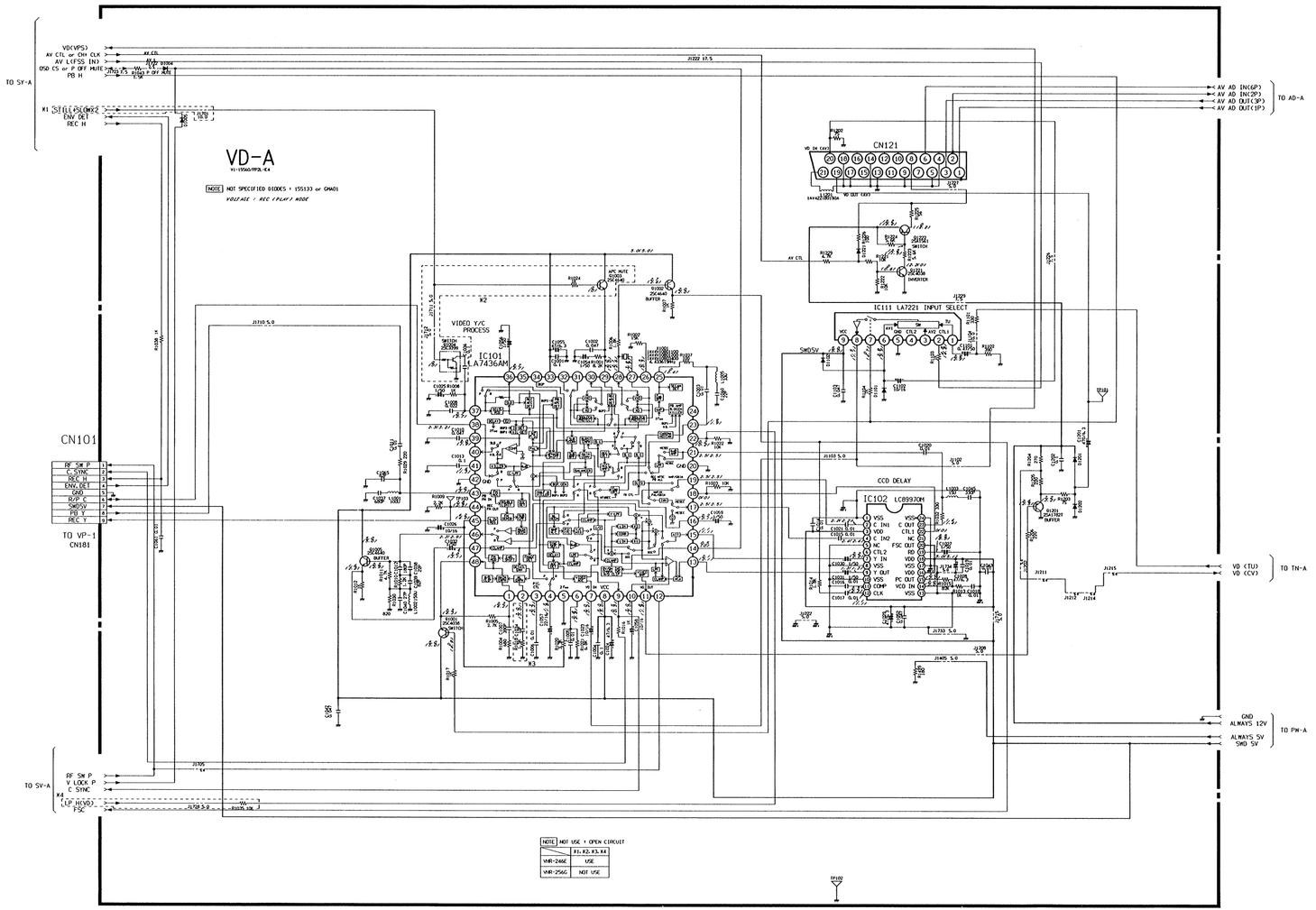
PW-1 BOARD POWER SUPPLY



PW-1 P.W.B.



CP-1 BOARD (VD-A) VIDEO (VHR-256G & VHR-246E)

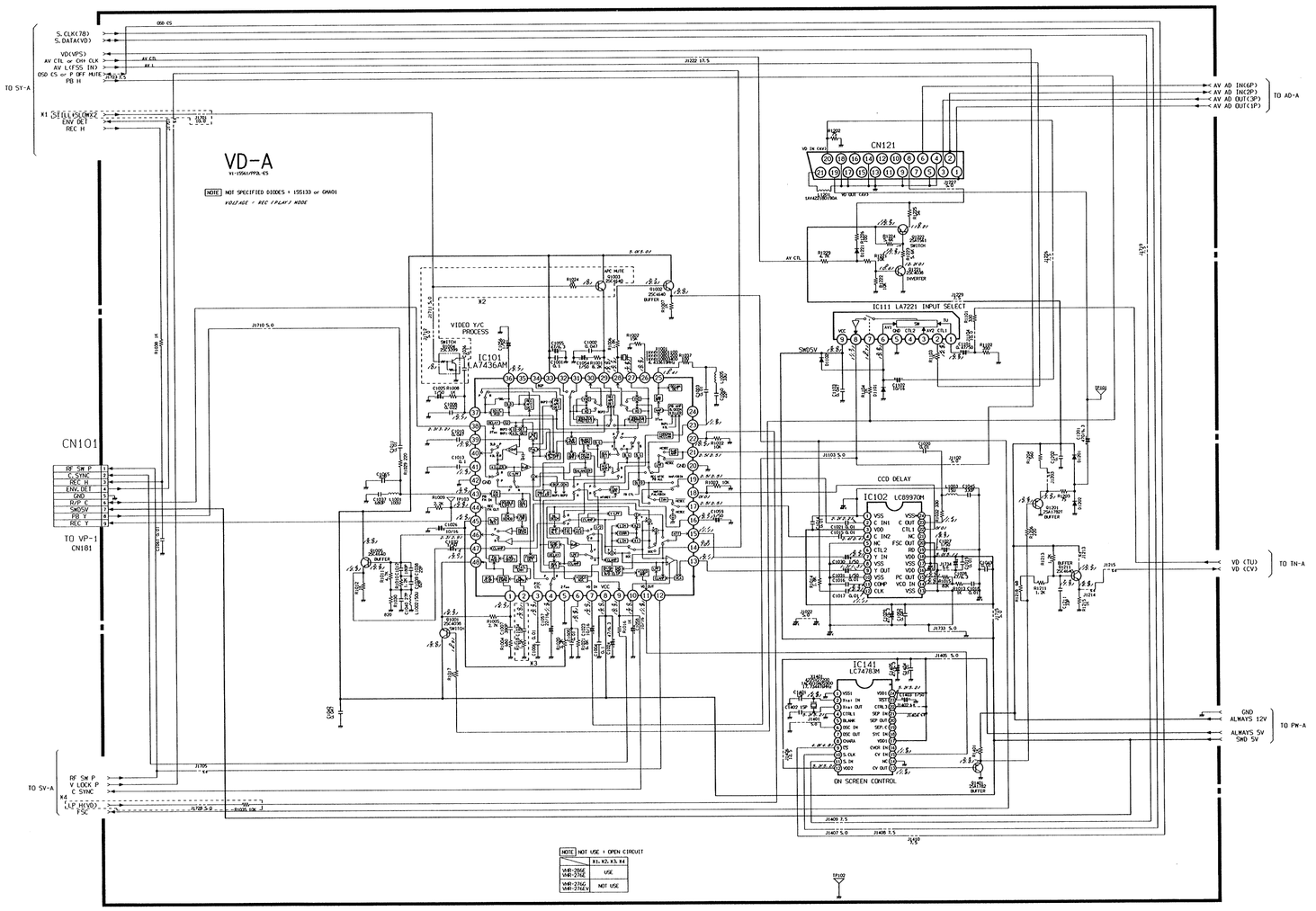


VIDEO CIRCUIT WAVEFORMS

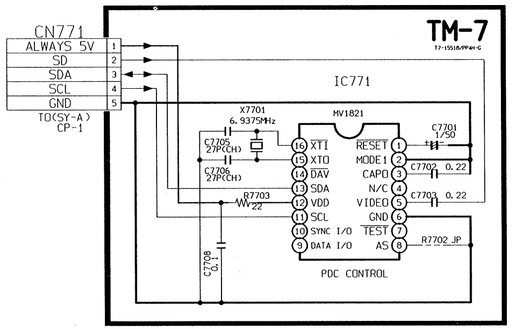
WF-V-TR

TEST LOCATION	WAVEFORM	MODE / LEVEL	TEST LOCATION	WAVEFORM	MODE / LEVEL
IC 101 Pin 1		REC, EE 0.5Vp-p	IC 101 Pin 38 (PB CHROMA IN)		PB 0.3Vp-p
IC 101 Pin 7 (VIDEO IN)		REC, EE 1.0Vp-p	IC 101 Pin 43 (PB FM IN)		PB 0.6Vp-p
IC 101 Pin 11 (VIDEO OUT)		REC, EE 2.0Vp-p	IC 101 Pin 44 TP103 (REC FM OUT)		REC 2.0Vp-p
IC 101 Pin 11 (VIDEO OUT)		PB 2.5Vp-p	IC 101 Pin 46		REC, EE 0.5Vp-p
IC 101 (UPPER) Pin 11 (LOWER) Pin 14		STILL (UPPER) 2.0Vp-p (LOWER) 5.0Vp-p	IC 101 Pin 46		PB 0.6Vp-p
IC 101 Pin 13 Pin 15		PB 0.4Vp-p	IC 101 Pin 47		REC, EE 0.5Vp-p
IC 101 Pin 17 Pin 19 Pin 21		PB 0.4Vp-p	IC 101 Pin 47		PB 0.6Vp-p
IC 101 Pin 38 (REC CHROMA OUT)		REC 0.4Vp-p			

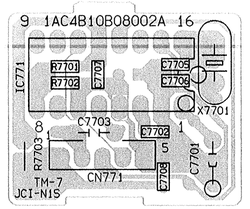
CP-1 BOARD (VD-A) VIDEO (VHR-276G, VHR-276EV, VHR-286E & VHR-276E)



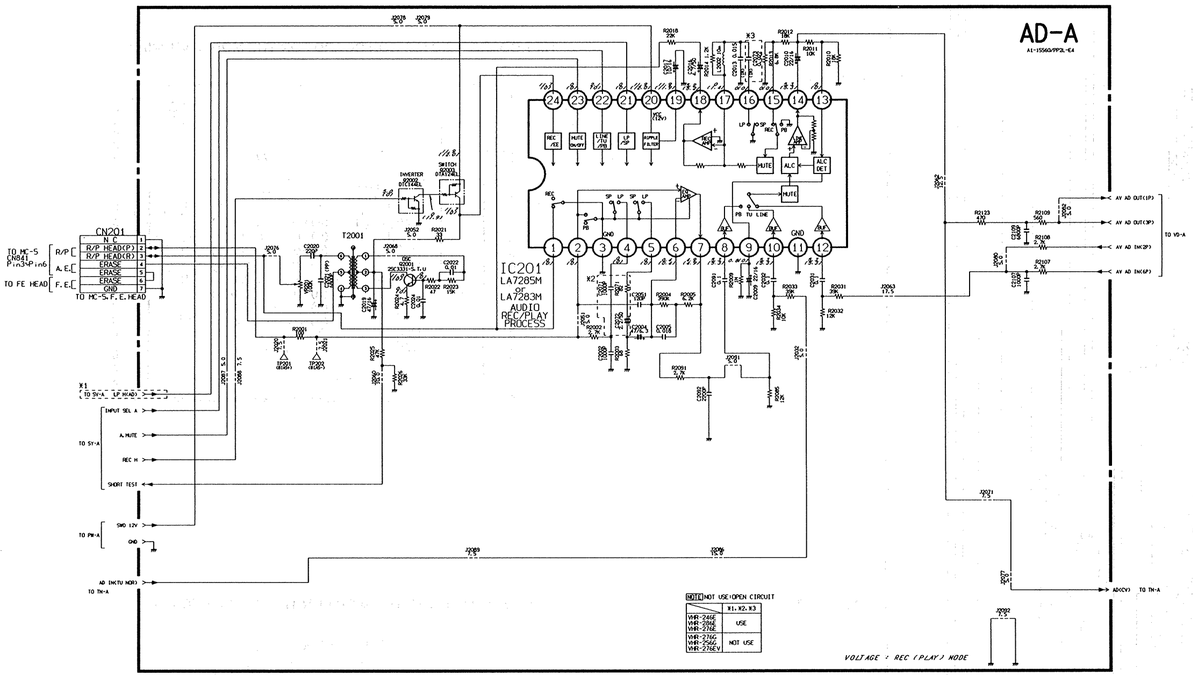
TM-7 BOARD PDC (OPTION BOARD FOR THE MODEL VHR-276E)



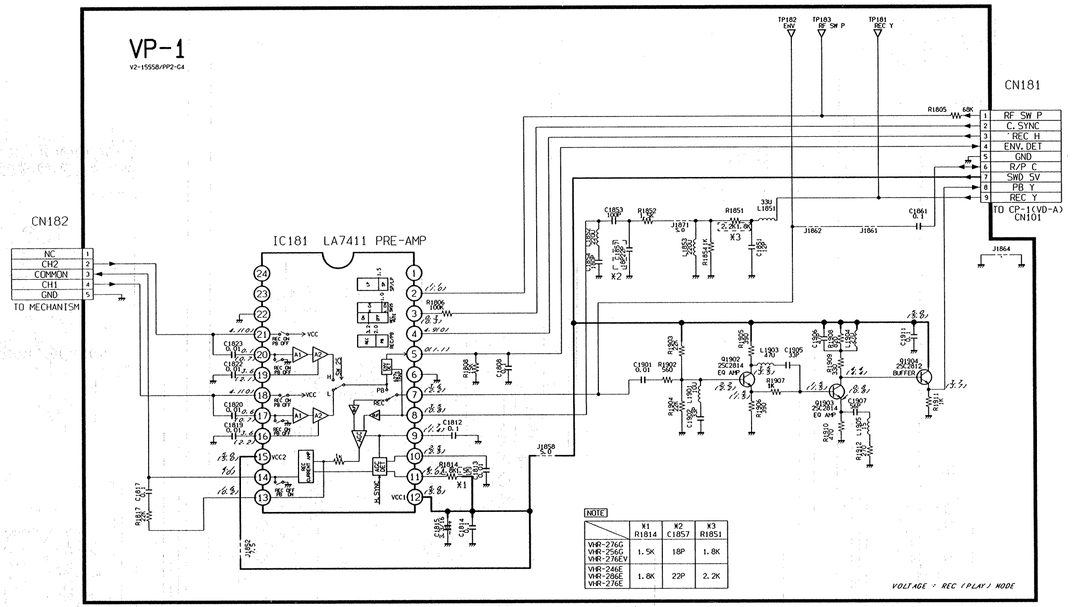
TM-7 P.W.B. (OPTION BOARD FOR THE MODEL VHR-276E)



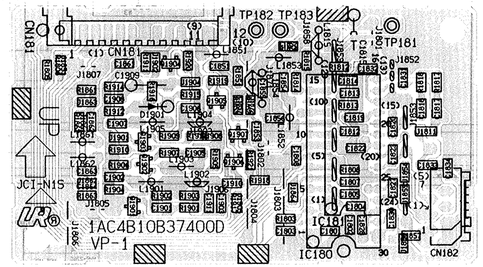
CP-1 BOARD (AD-A) AUDIO



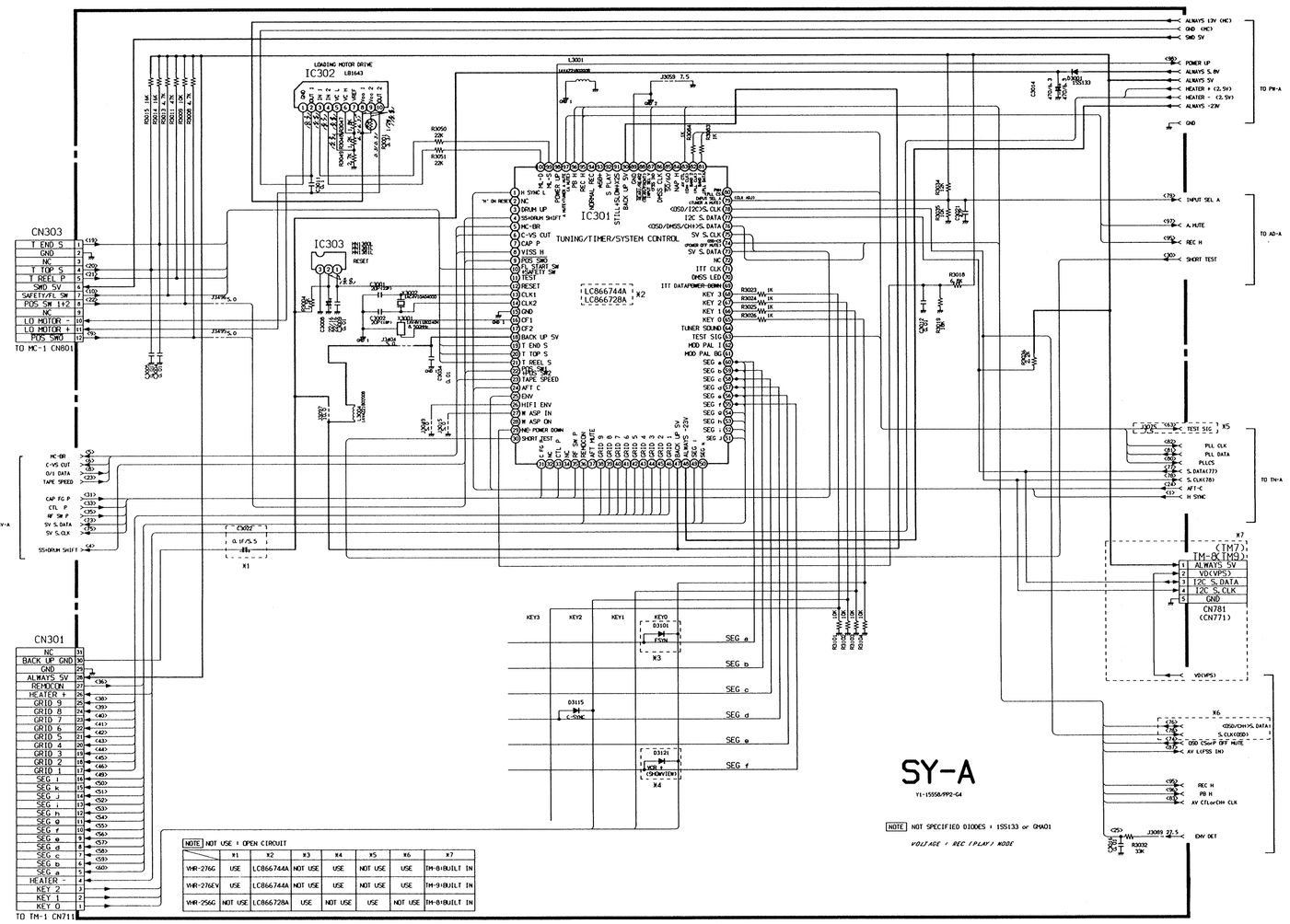
VP-1 BOARD VIDEO PRE-AMP



VP-1 P.W.B.



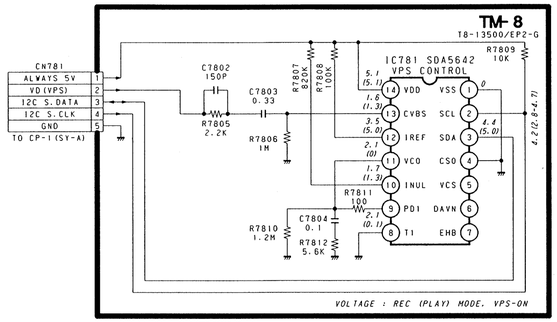
CP-1 BOARD (SY-A) SYSTEM CONTROL (VHR-276G, VHR-256G & VHR-276EV)



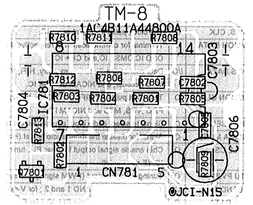
NOTE NOT USE : OPEN CIRCUIT

	X1	X2	X3	X4	X5	X6	X7
VHR-276G	USE	LC866744A	NOT USE	USE	NOT USE	USE	TM-8 BUILT IN
VHR-276EV	USE	LC866744A	NOT USE	USE	NOT USE	USE	TM-9 BUILT IN
VHR-256G	NOT USE	LC866728A	USE	NOT USE	USE	NOT USE	TM-8 BUILT IN

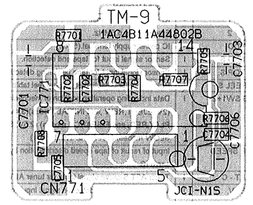
TM-8 BOARD VPS (VHR-276G & VHR-256G)



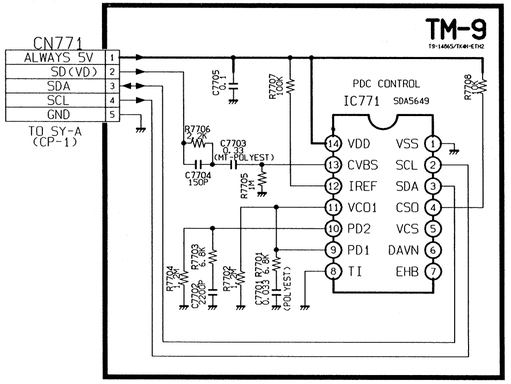
TM-8 P.W.B. (VHR-276G & VHR-256G)



TM-9 P.W.B. (VHR-286E & VHR-276EV)



TM-9 BOARD VPS/PDC (VHR-286E & VHR-276EV)



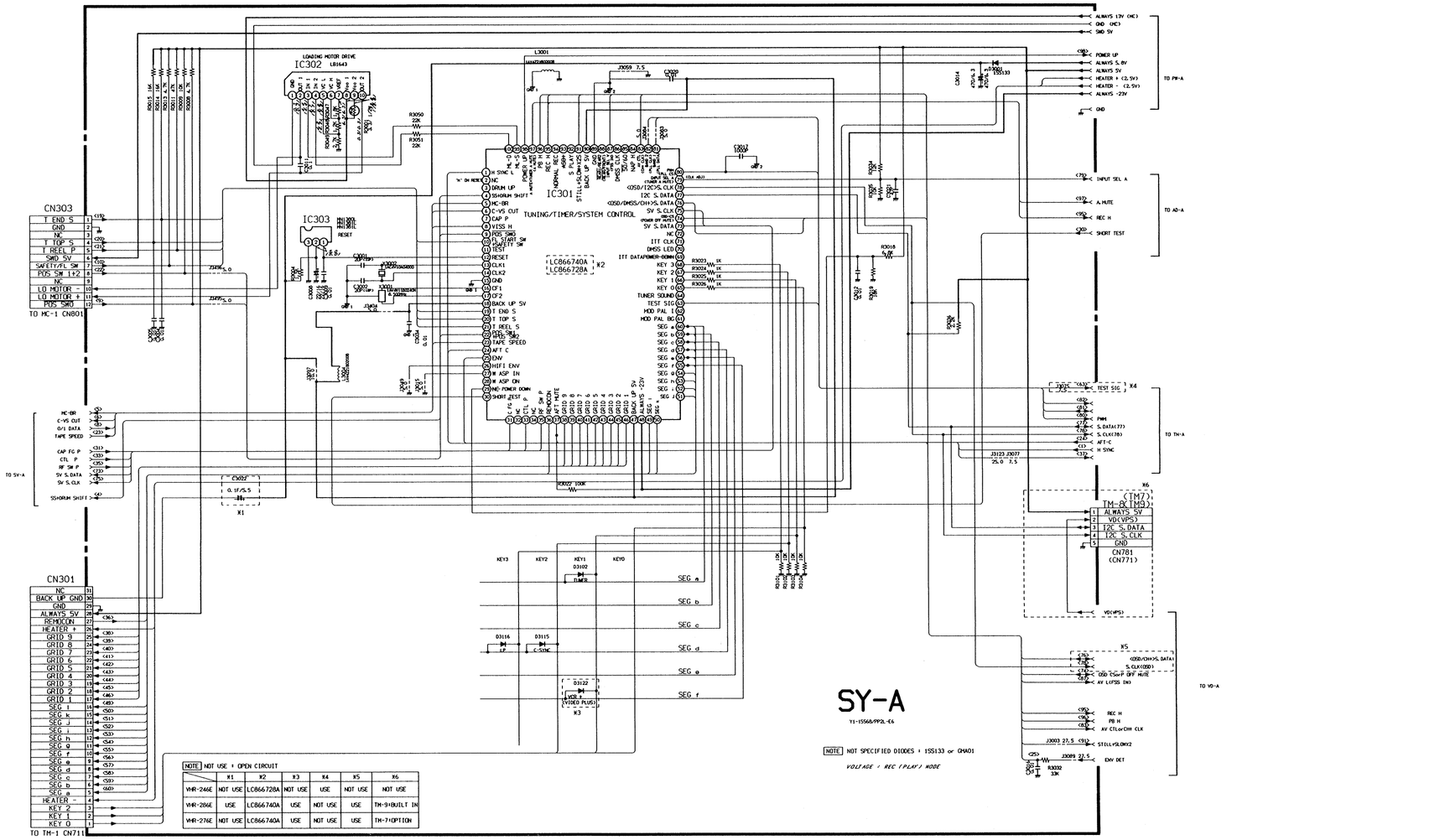
IC301 SYSTEM CONTROL,TIMER, & TUNING CONTROL MPU PIN FUNCTIONS TABLE

No.	Name	I/O	I/O Signal Function
1	H SYNC L	I	Sync. signal input for existing channel discrimination and TV system discrimination.
2	-	-	-
3	DRUM UP	O	Head drum motor rotation speed up signal.
4	SS + DRUM SHIFT	O	Signal for indicating SLOW/STILL modes and alternation of drum motor control data. (3 value voltage)
5	MC - BR	O	Brake signal for capstan motor.
6	C - Vs CUT	O	Cut off for capstan motor control voltage in SLOW / STILL modes.
7	CAP P.	O	Gain down control for Head Motor at SLOW mode.
8	VISS H	I	CTL pulse duty detection signal input. Used for VISS detection.
9	POS SW0	I	Data indicating operation position of mechanism. (0V : SEARCH,STILL,SLOW,STOP,PLAY, and REC modes) (5V : EJECT,REW, and INITIAL modes)
10	FL- START + SAFETY SW	I	Switch input indicating start of cassette loading or discharge by cassette mechanism and detecting accidental erasure prevention tab of cassette tape.
11	-	-	-
12	RESET	I	Initial reset terminal for this IC.
13	CLK 1	-	Clock OSC during power failures.
14	CLK 2	-	Frequency is 32kHz.
15	VSS	-	Ground terminal
16	CF 1	-	IC clock OSC terminal.
17	CF 2	-	Frequency is 6.5MHz.
18	VDD	-	IC power supply terminal.(5Vdc)
19	T. END S.	I	Sensor signal input for tape end detection.
20	T. TOP S.	I	Sensor signal input for tape beginning detection.
21	T. REEL S.	I	Pulse input for detection of take-up reel table rotation.
22	POS SW1+2	I	Data indicating operation position of mechanism. (2V: EJECT,REW ,and INITIAL modes)(3.4V: STOP, PLAY,REC, and F-SEARCH modes) (2.5V: STILL and SLOW modes) (5V: R-SEARCH mode)
23	TAPE SPEED	I	Input of result of tape speed discrimination by digital servo IC.
24	AFT - C	I	Tuner AFT S-curve signal input for tuner AFT control.
25	ENV.	I	Video head envelope detection signal input for ATR function.
26	HiFi ENV.	I	Hi-Fi audio head envelope detection signal input for ATR function. (Hi-Fi model only)
27	WIDE ASPECT IN	I	Wide aspect video system indication signal input.
28	WIDE ASPECT ON	O	Video wide aspect system selection signal.
29	POWER DOWN	I	Power failure detection terminal.
30	SHORT TEST	I	REC mode indication signal input (REC 12V).
31	C - FG P.	I	FG signal input of capstan motor.
32	-	-	-
33	CTL P.	I	CTL head recording / playback pulse signal input.
34	-	-	-
35	RF SW P.	I	RF switching pulse input, created by head drum P.G.
36	REMOCON	I	Remote control signal input.
37	AFT MUTE	O	"H" output during TU AFT mute. (V-syn model only)
38	G9	O	
39	G8	O	
40	G7	O	
41	G6	O	
42	G5	O	Display grid outputs (FLD).
43	G4	O	
44	G3	O	
45	G2	O	
46	G1	O	
47	VDD	-	IC power supply input.(5Vdc)
48	V LOAD	O	-23V input for FLD drive.
49	SEG i	O	
50	SEG k	O	
51	SEG j	O	Display segment outputs (FLD).
52	SEG i	O	(Includes key-scan output)

No.	Name	I/O	I/O Signal Function
53	SEG h	O	
54	SEG g	O	
55	SEG f	O	
56	SEG e	O	
57	SEG d	O	Display segment outputs (FLD).
58	SEG c	O	(Includes key-scan output)
59	SEG b	O	
60	SEG a	O	
61	MOD PAL BG	O	Signal for RF output TV-system setting. (PAL-B/G)
62	MOD PAL I	O	Signal for RF output TV-system setting. (PAL-I)
63	TEST SIGNAL	O	Signal for RF test signal output.
64	TUNER SOUND	O	TV system indication signal output. (PALI H / others L)
65	KEY IN 0	I	
66	KEY IN 1	I	Operation key data inputs.
67	KEY IN 2	I	
68	KEY IN 3	I	
69	ITT DATA	I/O	Data exchange with MTS and NICAM decoder IC.
70	DMSS LED	O	Signal for indicating DMSS mode.
71	ITT CLK	O	The clock pulse for MTS and NICAM decoder IC.
72	-	-	-
73	SV S. DATA	O	Output 8-bit X 4 serial data giving operation mode and tracking data, etc., to digital servo IC.
74	OSD CS	O	Chip enable (access) signal output to OSD IC.
	POWER OFF MUTE	O	"H" output when power is off, for disable output signal.
75	SV S. CLK	O	The clock pulse for digital servo IC.
76	COMMON DATA	O	Terminal for communication of respective data with OSD IC,DMSS IC,and CH+ IC.
77	I2C S.DATA	I/O	Data exchange with tuning memory, HiFi, VPS, PDC, MTS decoder, and NICAM decoder IC.
78	COMMON CLK	O	The clock pulse for HiFi ,OSD, CH+, tuning memory, PDC ,VPS, MTS and NICAM IC
79	INPUT SEL A	O	Signal to select audio input source.(except HiFi set)
	TUNER A MUTE	O	Signal for disable the tuner audio signal.(HiFi set)
80	PLL CS	O	Chip enable signal output to tuner PLL tuning system IC. (F-syn model)
	TU PWM	O	Tuning voltage output (PWM signal). (V-syn model)
81	BAND 1	O	Tuning band data(BAND 1 and 2 ; for V-syn model).
	PLL DATA	O	Data exchange with tuner PLL IC (for F-syn model).
82	BAND 2	O	BAND 1 and 2 ; (L,L)=VHF-LOW (L,H)=VHF-HIGH (H,L)=UHF (H,H)=SKIP. (for V-syn model)
	PLL CLK	O	The clock for PLL IC of tuner unit (for F-syn model).
83	CH PLUS CLK	O	The clock pulse for CH+ in/out-select IC.(CH+ model)
	AV CTL	O	Audio input source selecting for audio IC.
84	NAP H	O	"H" output during NTSC (NAP) playback mode.
85	50 / 60	O	"H" output during 60 field mode.
86	DMSS CLK	O	Clock signal for audio DMSS unit.
87	INPUT SEL V	O	Signal for selecting video input source.
	FSS IN	I	CH+ mode control signal input (CH+ model).
88	AV1/AV2	O	Signal for selecting AV-input(video/audio)source/
89	VSS	-	IC ground terminal.
90	VDD	-	IC power supply input.(5Vdc)
91	STILL+SLOW+X2S	O	STILL, SLOW, or X2speed modes indication.
92	SPECIAL PLAY	O	Signal to indicate CUE, REV, STILL and SLOW modes.
93	-	-	-
94	NORMAL REC	O	Signal for indicating normal audio recording.
95	REC H	O	Signal for indicating recording mode.
96	PB H	O	Signal for indicating playback mode.
97	A MUTE+TU A MUTE	O	"H" output for disable audio output signal.
98	POWER UP	O	"HIGH" output except when power is off. Indicating that power is ON.
99	ML- S	O	Loading motor rotation speed (low / medium / high) indication signal.
100	ML- D	O	Loading motor rotation direction (FWD / REV) indication signal.

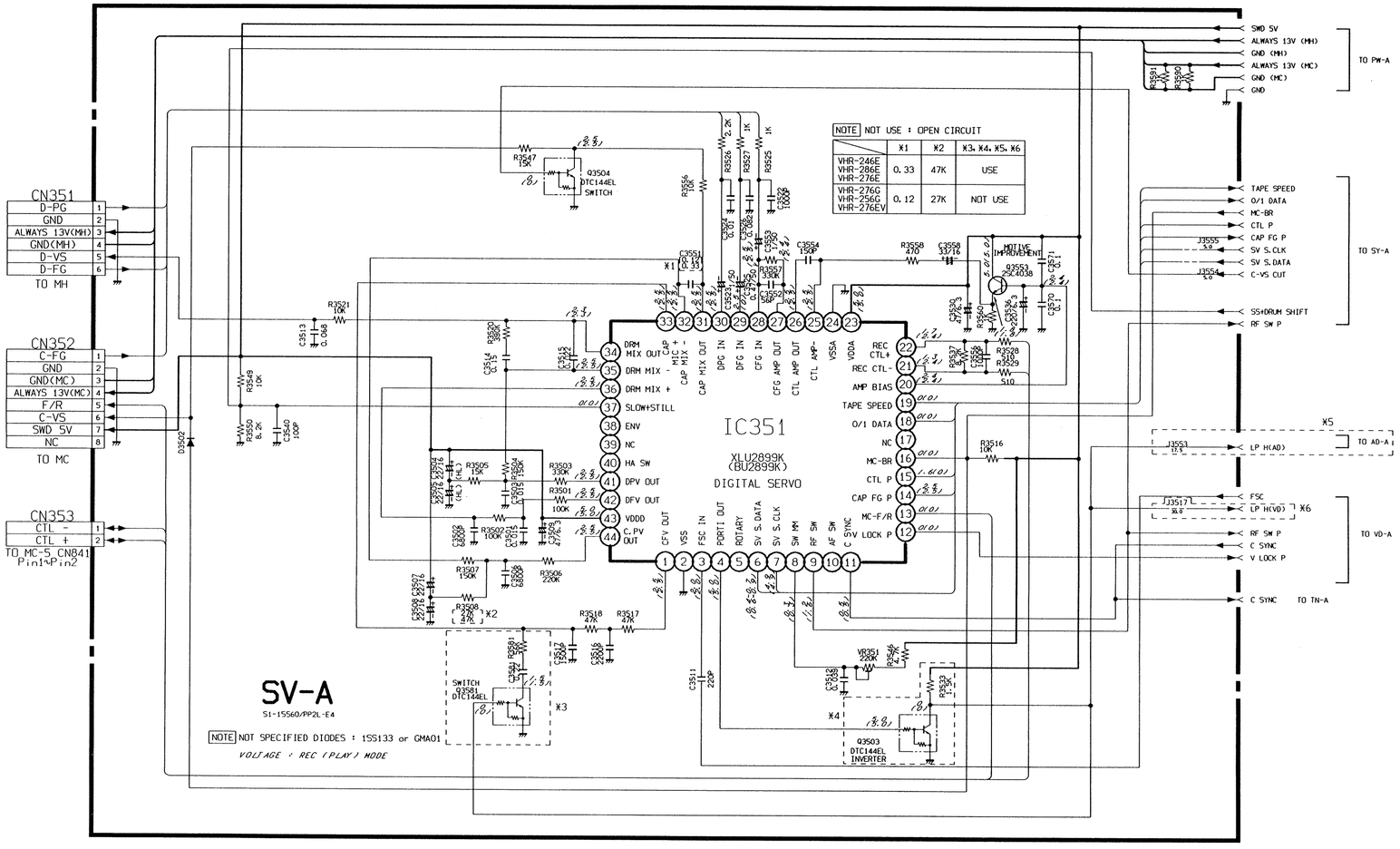
PP_TTS_A

CP-1 BOARD (SY-A) SYSTEM CONTROL (VHR-246E, VHR-286E & VHR-276E)



	K1	K2	K3	K4	K5	K6
VHR-246E	NOT USE	LC866720A	NOT USE	USE	NOT USE	NOT USE
VHR-286E	USE	LC866740A	USE	NOT USE	USE	TH-9=BUILT IN
VHR-276E	NOT USE	LC866740A	USE	NOT USE	USE	TH-7=OPTION

CP-1 BOARD (SV-A) SERVO

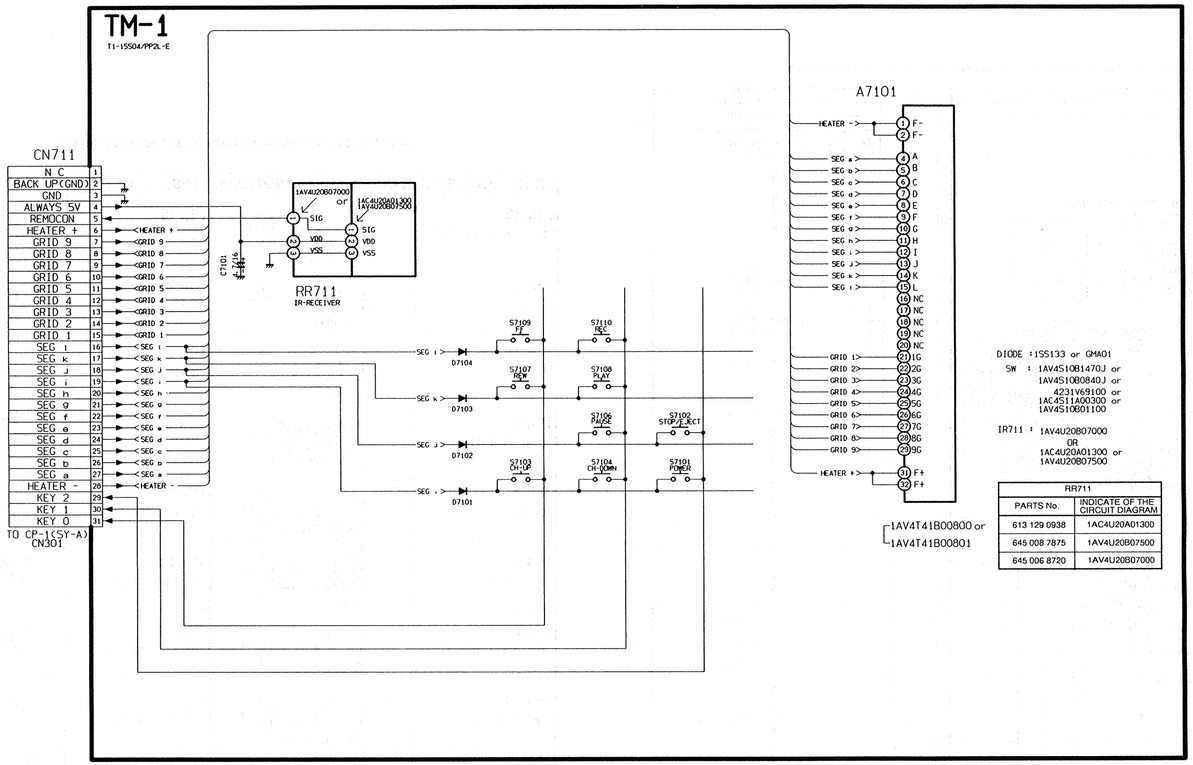


SERVO CIRCUIT WAVEFORMS (IC351:BU2899 Series)

TEST LOCATION	WAVEFORM & MODE/LEVEL	TEST LOCATION	WAVEFORM & MODE/LEVEL
Pin 40 (H.A.SWITCHING)	SLOW PB 5.0V 20msec 20msec	**Pin 15** (CTL PULSE)	REC 5.0V 24msec 16msec
Pin 42 (PWM)	5.0V 8.66KHz	**Pin 15** (CTL PULSE)	PB 850μsec 5.0V 40msec
Pin 41, 44, 1 (PWM)	5.0V 69.27KHz	**Pin 21** (CTL HEAD-)	REC 3.6V 1.4V 24msec 16msec
Pin 3 (FSC INPUT)	0.3V 4.43MHz	**Pin 22** (CTL HEAD+)	REC 1.4V 3.6V 24msec 16msec
Pin 5 (ROTARY)	PB 5.0V 20msec 20msec	**Pin 26** (CTL AMP OUT)	PB 2.0V 40msec
Pin 8 (D-PG MM)	2msec 2.5V 7msec	**Pin 28** (C-FG INPUT)	10mV 1.32msec
Pin 9 (RF SW PULSE)	5.0V 20msec 20msec	**Pin 29** (D-FG INPUT)	30mV 1.33msec
Pin 10 (AF SW PULSE)	PB 5.0V 20msec 20msec	**Pin 30** (D-PG INPUT)	250mV 40msec
Pin 11 (COMPOSITE SYNC INPUT)	4.2V T=20msec	**Pin 38** (ENV.SW INPUT)	SLOW PB 4.0V 20msec 20msec
Pin 14 (C-FG PULSE)	5.0V 756.5Hz		

WF-S-PP

TM-1 BOARD OPERATION KEY & DISPLAY



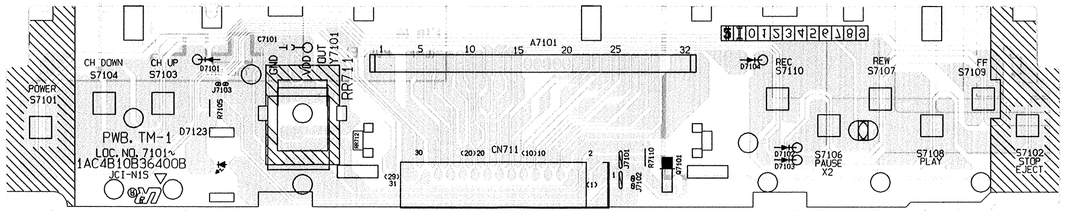
DIODE : 1SS133 or GMA01

SW : 1AV4S10B1470J or
1AV4S10B0840J or
4231V69100 or
1AC4S11A00300 or
1AV4S10B01100

IR711 : 1AV4U20B07000
OR
1AC4U20A01300 or
1AV4U20B07500

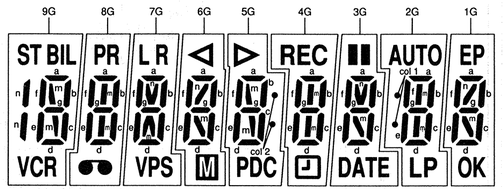
RR711	
PARTS No.	INDICATE OF THE CIRCUIT DIAGRAM
613 129 0938	1AC4U20A01300
645 008 7875	1AV4U20B07500
645 006 8720	1AV4U20B07000

TM-1 P.W.B.



A7101 DISPLAY (FLD) GRID/ANODE ASSIGNMENT DRAWING & TABLE

GRID & SEGMENT ASSIGNMENT

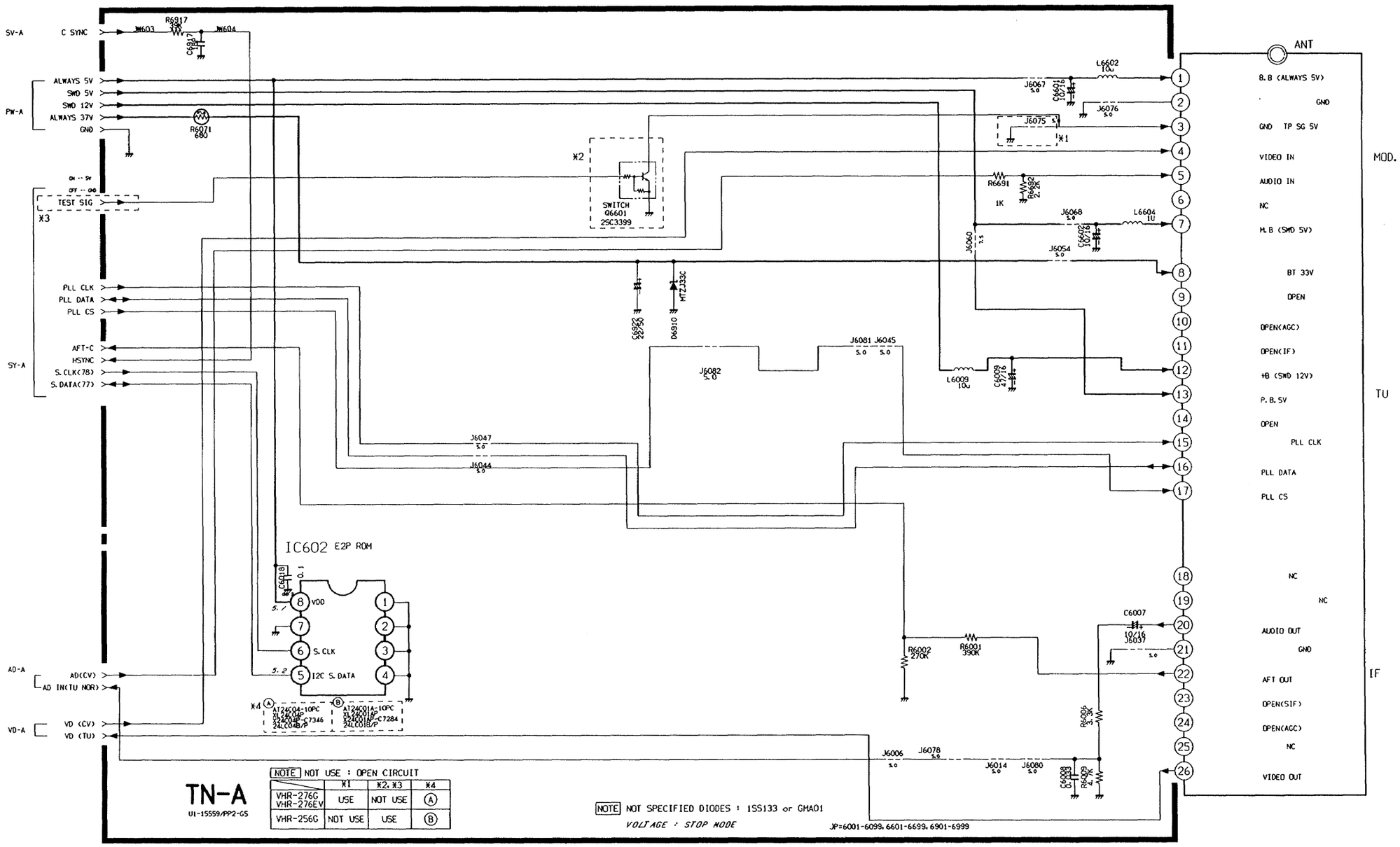


ANODE CONNECTION

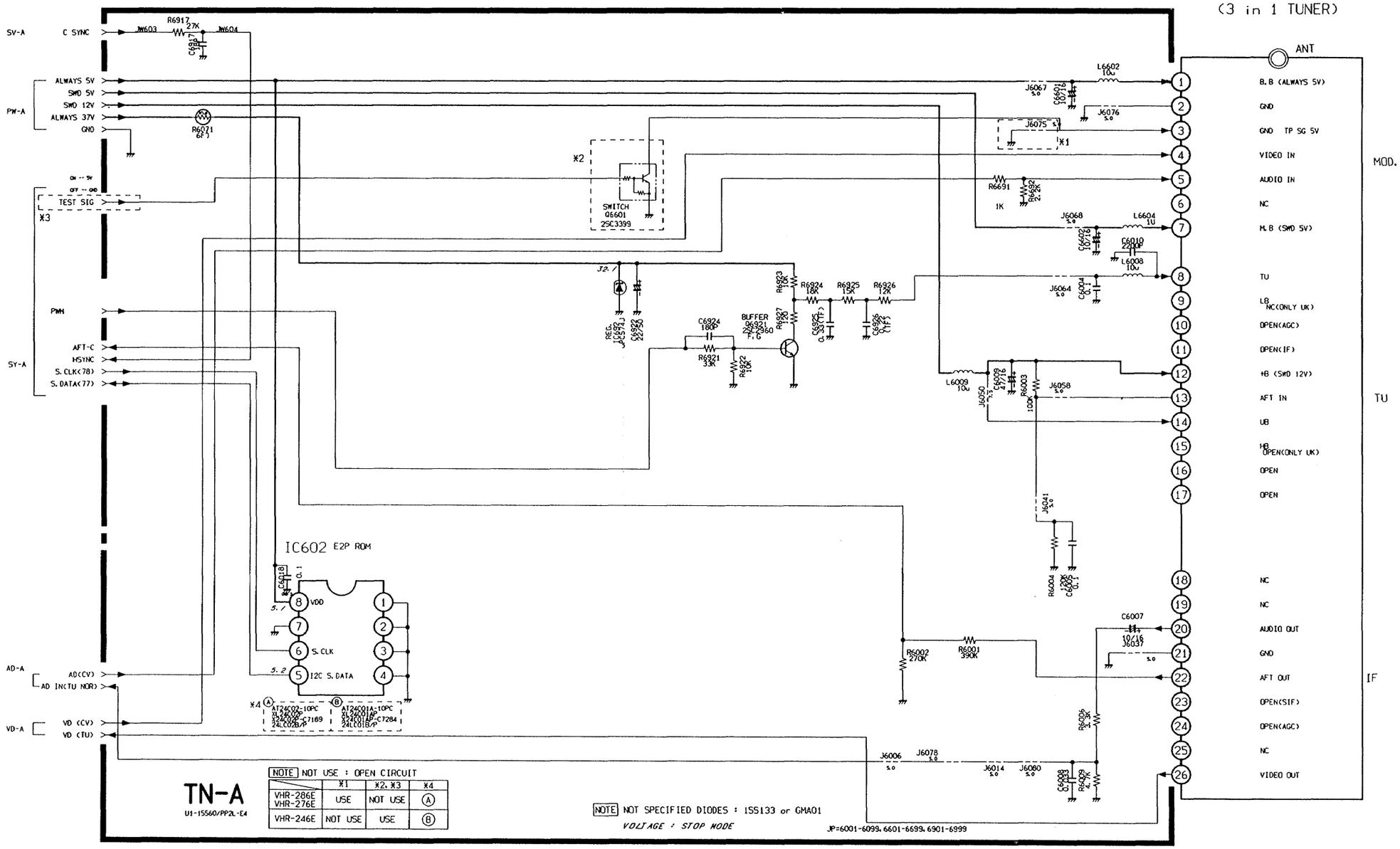
GRID / SEGMENT	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	ST	PR	L	◁	▷	REC	▮▮	AUTO	EP
b	n	—	n	n	—	—	n	—	n
c	a	a	a	a	a	a	a	a	a
d	b	b	b	b	b	b	b	b	b
e	c	c	c	c	c	c	c	c	c
f	d	d	d	d	d	d	d	d	d
g	e	e	e	e	e	e	e	e	e
h	f	f	f	f	f	f	f	f	f
i	g	g	g	g	g	g	g	g	g
j	m	m	m	m	m	m	m	m	m
k	BIL	—	VPS	—	col 2	—	—	col 1	—
l	VCR	👓	R	Ⓜ	PDC	⏎	DATE	LP	OK

GR-00800

CP-1 BOARD (TN-A) TUNER IF CONNECTION (VHR-276G, VHR-256G & VHR-276EV)



CP-1 BOARD (TN-A) TUNER IF CONNECTION (VHR-246E, VHR-286E & VHR-276E)


(3 in 1 TUNER)
ANT
B.B (ALWAYS 5V)
GND
GND TP SG 5V
VIDEO IN
AUDIO IN
NC
M.B (SWD 5V)
TU
LB NC(ONLY UK)
OPEN(AGC)
OPEN(IF)
+B (SWD 12V)
AFT IN
UB
HB OPEN(ONLY UK)
OPEN
OPEN
NC
NC
AUDIO OUT
GND
AFT OUT
OPEN(SIF)
OPEN(AGC)
NC
VIDEO OUT
MOD.
TU
IF
SV-A
C SYNC
ALWAYS 5V
SWD 5V
SWD 12V
ALWAYS 37V
GND
PW-A
TEST SIG
PWM
AFT-C
HSYNC
S.CLK(78)
S.DATA(77)
SY-A
AD(CV)
AD INC(TU NOR)
AD-A
VD (CV)
VD (TU)
VD-A
IC602 E2P ROM
VDD
S.CLK
I2C S.DATA
SWITCH Q6601 2SC3399
BUFFER Q6921 2SC2960
R6917 27K
R6671 68
R6691 1K
R6692 2.2K
R6923 10K
R6924 18K
R6925 15K
R6926 12K
R6927 100
R6921 3.3K
R6922 10K
R6002 270K
R6001 390K
R6003 100K
R6004 120K
R6005 3K
R6006 3K
R6007 2.2K
L6602 10u
L6604 1u
L6608 10u
L6009 10u
C6010 220P
C6007 10/16
C6924 180P
C6925 0.01
C6926 0.1
C6927 0.1
C6928 0.1
C6929 0.1
C6930 0.1
C6931 0.1
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FILE NO.

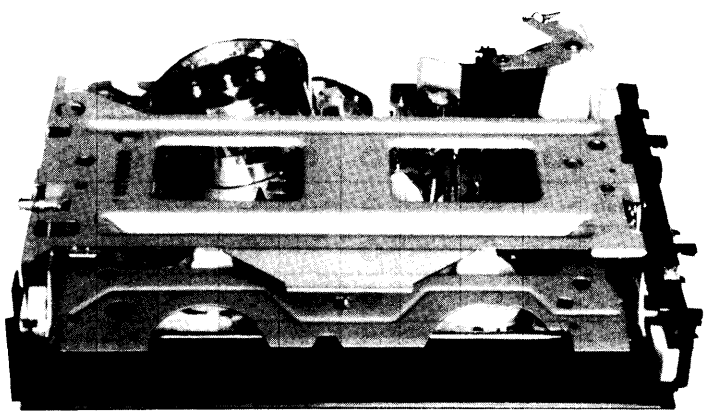
BASIC SERVICE TECHNICAL INFORMATION

SANYO

FISHER®

Video Cassette Recorder

V95 I MECHANISM



VHS
PAL SECAM NTSC

Contents

1. MAINTAINING AND CHECKING THE MECHANISM
1-1. REGULAR CHECKS AND MAINTENANCE ITEMS 2
1-2. SERVICE TOOLS 3
2. AN OVERVIEW OF THE MECHANISM
2-1. NAMES OF THE MAIN PARTS 4
2-2. AN OVERVIEW OF THE MECHANISM MODES 6
3. DIS-ASSEMBLING THE MAIN PARTS OF THE MECHANISM
3-1. HOW TO MAKE THE MECHANISM MOVE 8
3-2. MECHANISM UNIT 9
3-3. CASSETTE DRIVE MECHANISM 9
3-4. CLEANER ROLLER ASSEMBLY 11
3-5. CYLINDER (DRUM) 12
3-6. FE HEAD AND ACE HEAD 14
3-7. CAPSTAN MOTOR 15
3-8. LOADING MOTOR ASSEMBLY AND WORM GEAR ASSEMBLY ... 16
3-9. PINCH ROLLER PRESSURE MECHANISM 16
3-10. L GUIDE LEVER ASSEMBLY AND LOAD LEVER ASSEMBLY 18
3-11. BT LEVER ASSEMBLY 18
3-12. REEL DRIVE MECHANISM 19
3-13. BRAKES 20
3-14. GUIDES 22
3-15. WHEEL GEAR 2, MAIN CAM AND MODE SWITCH 23
3-16. CRESCENT SLIDE 24
3-17. S LOAD GEAR, T LOAD GEAR, S LOAD LEVER ASSEMBLY AND T LOAD LEVER ASSEMBLY 25
3-18. TAPE SENSORS, REEL SENSOR AND EP SW LEVER 26
4. MECHANISM CHECKS AND ADJUSTMENTS
4-1. REEL TABLE TORQUE CHECK 27
4-2. ADJUSTING THE BT LEVER ASSEMBLY POSITION AND CHECKING THE BACK TENSION TORQUE IN PLAY MODE 27
4-3. TAPE PATH ADJUSTMENT 28

MC-Service

REFERENCE No.MM531433

Notice

SANYO

- [●] CORRECTION
- [ ] PRODUCTION CHANGE
- [ ] SERVICE FLASH
- [ ] ADD INFORMATION
- [ ]
- [ ]

FISHER

FILE NO.

Please add this notice to the manual listed below.

Category : VIDEO CASSETTE RECORDER **Date : July/10/ '95**

Model : V95I MECHANISM **REF : No. MM531433**

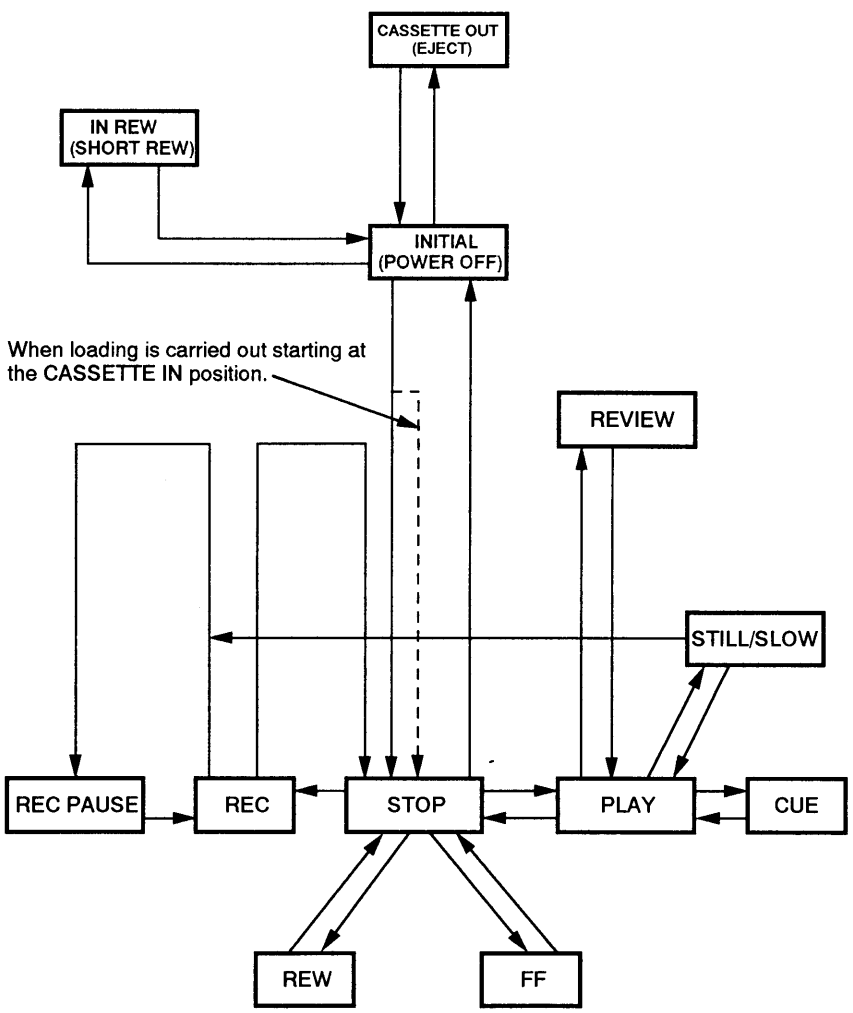
This correction notice is a revised edition of the V95I mechanism basic service technical information (Reference No. MM531433).

2-2. AN OVERVIEW OF THE MECHANISM MODES

2-2-1. MECHANISM MODE SWITCHING TABLE

NOTE: The letters and figures enclosed in circles in the mechanism mode column are the codes on the crescent slide.

HEX DATA	Mechanism mode
6	EJECT Ⓔ Distinguished by whether the EP switch is ON or OFF. Horizontal shift section. Vertical shift section.
2	IN REW
0	
7	INITIAL ⑦
0	Cleaner roller assembly: ON
1	S/T mounting incline assembly pressure begins.
0	
1	S/T mounting incline assembly pressure ends.
	REVIEW ①
0	
2	IDLER pos. ② (Pinch roller OFF)
0	
3	STILL/SLOW ③
0	
5	PLAY/STOP ⑤
0	
4	BRAKE pos. ④
0	
6	FF/REW ⑥



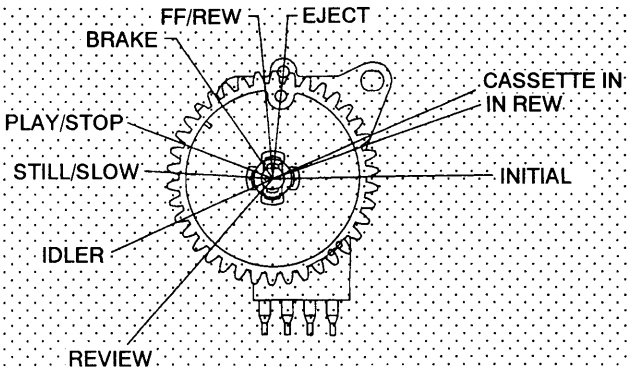
Printed in Japan
SANYO Electric Co., Ltd
Osaka, Japan

REFERENCE No. MM 531433-01

MODE SWITCH OUTPUT TABLE

HEX DATA	SW DATA 1	SW DATA X	SW DATA Y	SW DATA 2 Z	SW DATA 2
0	5.0V	H	H	H	5V
1	5.0V	H	H	L	0V
2	2.5V	H	L	H	5V
3	2.5V	H	L	L	0V
4	3.4V	L	H	H	5V
5	3.4V	L	H	L	0V
6	2.0V	L	L	H	5V
7	2.0V	L	L	L	0V

APPEARANCE OF MODE SWITCH AND RELATIONSHIP BETWEEN MODE POSITIONS



2-2-2. MOVEMENT CHECK LIST FOR THE MAIN PARTS OF THE MECHANISM

(S): Strength (W): Weakness

Principal parts \ Mechanism mode	EJECT	IN REW	INITIAL (POWER OFF)	(LOADING)	(UNLOADING)	REV	IDLER	STILL/SLOW	PLAY/STOP	BRAKE	FF/REW	
T brake assembly	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON/OFF	
S brake assembly	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON/OFF	
T soft brake assembly	OFF	OFF	***OFF***	ON	ON	ON	ON	OFF	OFF	OFF	OFF	
S soft lever	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	
BT lever assembly	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	
BT spring	OFF	OFF	OFF	OFF	OFF	ON(W)	ON(W)	ON(S)	ON(S)	ON(S)	ON(W)	
Pinch roller lever assembly	UP	UP	UP	UP/ DOWN	DOWN/ UP	ON	OFF	ON	ON	OFF	OFF	
Clutch mounting assembly	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	FF	
Load lever assembly	UNLO	UNLO	***UNLO***	LO	LO	LO	LO	LO	LO	LO	LO	
Capstan brake assembly	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	
S and T incline mounting assembly				LO	UNLO							
Cleaner roller assembly	OFF	OFF	OFF	(ON)	(ON)	OFF	OFF	OFF	OFF	OFF	OFF	

2-2-3. HOW TO CHECK THE MECHANISM MODE POSITION

You can tell which mode the mechanism is currently in by looking at the codes and marking-lines on the crescent slide on the underside of the mechanism chassis. The edge of the crescent mounting is used as the reference line, as shown in Fig.2-2-2, and the marking-lines and symbols indicating the mechanism modes are displayed on the crescent slide, which slides against the edge of the crescent mounting. The mechanism mode is read off from the marking-line on the slide crescent which is aligned with the reference-line on the crescent mounting.

Example: In Fig.2-2-2, marking-line 6 is aligned with the reference-line on the crescent mounting, so the mechanism is seen to be in FF/REW mode.

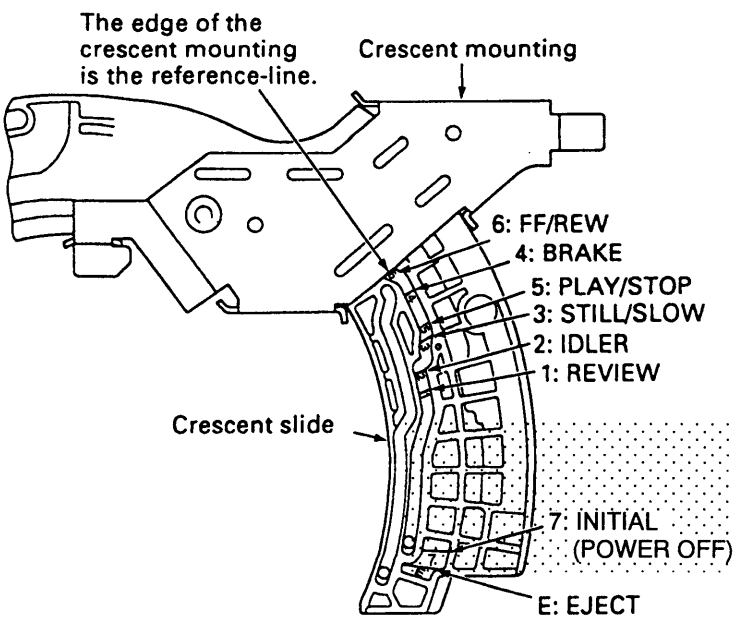


Fig.2-2-2

2-2-4. SELF-DIAGNOSIS DISPLAY

Some models are equipped with the SELF-DIAGNOSIS DISPLAYS function.

Use it as a means of finding out the symptoms and cause of the error before performing repairs.

For details, refer to the separate service manual for the respective models.

1. MAINTAINING AND CHECKING THE MECHANISM

1-1. REGULAR CHECKS AND MAINTENANCE ITEMS

To obtain full function and maximum performance from the set, and to stop it getting dirty or scratched, we recommend that you carry out the following maintenance procedures and regular checks. The maintenance checks described in the following section should also be carried out without fail after carrying out any repairs to the set.

NOTE: OIL AND GREASE

- Always use the specified brands of oil and grease. If you use a grease with the wrong viscosity, for example, this can lead to all sorts of problems. Be careful to keep the oil and grease free of dust and foreign bodies.
- A "drop" of oil is the amount of oil remaining on the tip of a rod with a diameter of 1.5mm after it is dipped in oil to a depth of 1cm and then taken out.

1-1-1. REGULAR CHECKS

○Clean ◎Check △Oil

Part maintained \ Hours of use (H)		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	Remarks
Tape path system	Tape guide	○	○	○	○	○	○	○	○	○	○	
	ACE head, full erase head	○	○	○	○	○	○	○	○	○	○	
	Cylinder (drum)	○	○ (◎)	○ (◎)	○ (◎)	○ (◎)	○ (◎)	○ (◎)	○ (◎)	○ (◎)	○ (◎)	The life of parts varies enormously, depending on the environment in which the part is used.
	Cleaner roller assembly		◎		◎		◎		◎		◎	
	Pinch roller	○	○	○	○	○	○	○	○	○	○	
Drive system	Reel table		○		○△		○		○△		○	
	Reel belt	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
	Relay gear, Pulley shaft, Gear shaft		△		△		△		△		△	
	Loading motor		◎		◎		◎		◎		◎	
Perform-ance checks	Back tension		◎		◎		◎		◎		◎	Playback tension torque: 30 to 50g/cm
	Brake system		◎		◎		◎		◎		◎	
	FWD, REW, PLAY torque, REV torque		◎		◎		◎		◎		◎	FWD: 600g/cm or over REW: 600g/cm or over PLAY (SP mode): 80 to 140g/cm REV: 120 to 220g/cm

1-1-2. CLEANING

1. Cylinder (Drum) (See Fig.1-1-1)

Moisten a chamois with methyl alcohol and clean the video head (including the Hi-Fi audio head) and the tape path surface of the cylinder. Be sure to wipe horizontally in relation to the video head. If you wipe vertically, or use excessive force, you can damage the video head.

2. Tape Path System / Reel Drive System

Clean the pinch roller, the capstan shaft, the tape guides, the FE head, the ACE head, the reel table, the pulley and the reel belt with a soft cloth, or chamois, moistened with methyl alcohol.

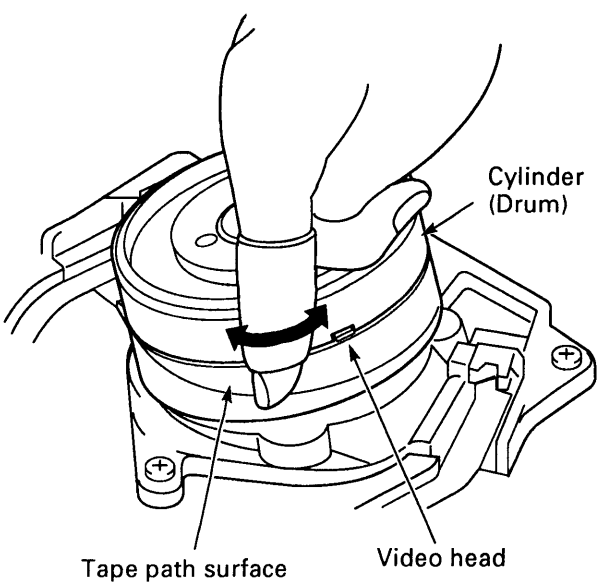


Fig.1-1-1

1-2. SERVICE TOOLS

1-2-1. SERVICE TOOLS
NOTES ON ALIGNMENT TAPES

Select a PAL or NTSC alignment tape from the list below, according to the transmission system of the VCR you are repairing.

PAL: For models with 625 scanning lines and a field frequency of 50Hz

NTSC: For models with 525 scanning lines and a field frequency of 60Hz

No.	Tool	Tool No.		Remarks
		NTSC	PAL	
1	Alignment tape	VHJ-0005	VHJ-0008	SP colour bar 1kHz (normal)
2	Alignment tape	VHJ-0006	VHJ-0009	SP monoscope 7kHz (normal)
3	Alignment tape	VHJ-0007	———	EP monoscope
4	Alignment tape	———	VHJ-0052	LP monoscope
5	Eccentric screw driver	VHJ-0003		Used to adjust the tape path
6	Nut box	VHJ-0048		Used to adjust the height of the lever load assembly
7	Torque dial gauge	VHJ-0004		Used to measure reel winding torque
8	Cassette torque meter	VHJ-0016		Used to measure back tension torque
9	Load lever assembly height adjustment tool	VHJ-0102		Used to adjust the height of the load lever assembly
10	Torque gauge screwdriver	VHJ-0014		Used to adjust the tightening torque of screws
11	3 mm dia. bit for torque screwdriver	VHJ-0045		Used to replace the bit of the torque gauge screwdriver
12	Video head removing tool	VHJ-0041		Used to remove the upper cylinder
13	Oil	VHJ-0099		
14	Grease	VHJ-0100		
15	Grease	VHJ-0101		
16	Relay cables	VHJ-0106		Relay cables of mechanism and CP-1 PWB assembly

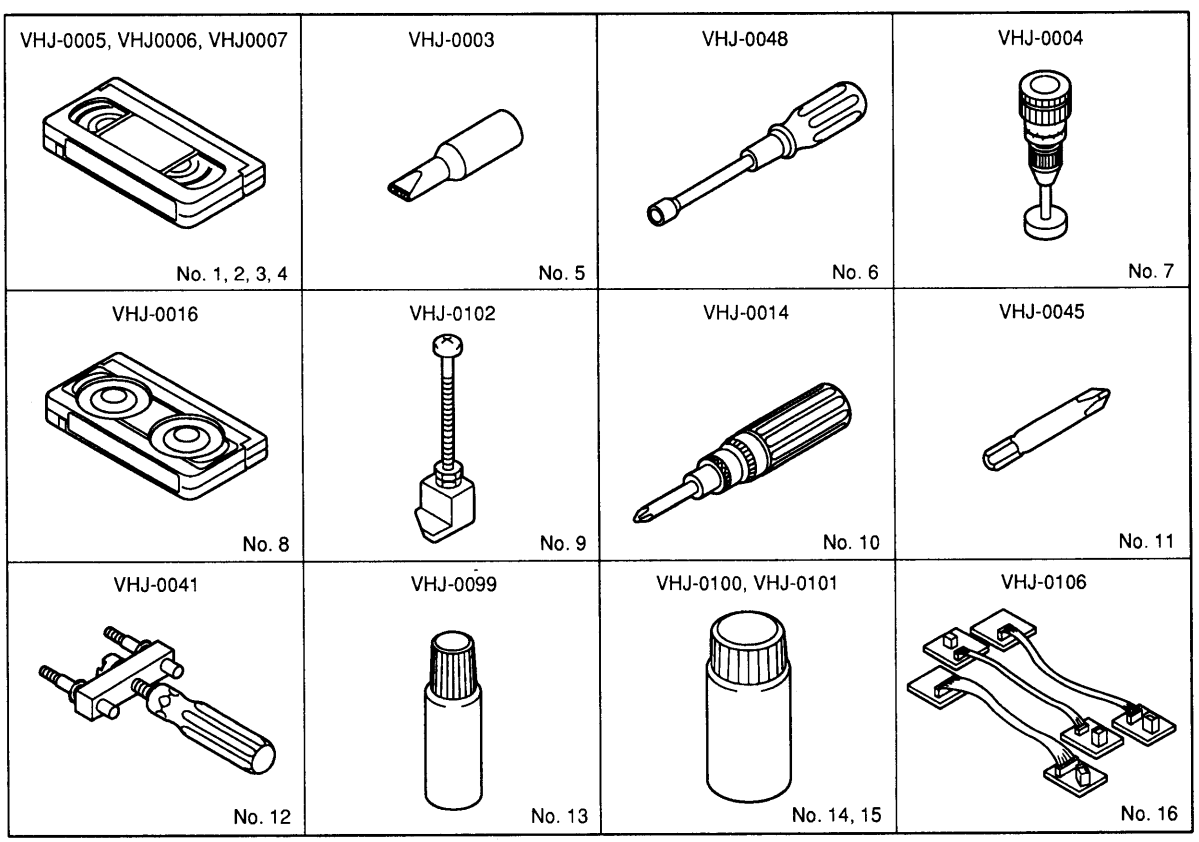


Fig.1-2-1

1-2-2. Using the Relay Cable (VHJ-0106)

The mechanism can be repaired without using the relay cable (VHJ-0106). As shown in Fig. 1-3-1, the relay cable (VHJ-0106) is a tool used for relay between the CP-1 PWB assembly and mechanism unit.
When connecting it, take note of the pin number of the connector.

NOTE 1: Do not place the mechanism upright as shown in Fig. 1-3-1 when inserting/ejecting the cassette.
NOTE 2: For NTSC models, be sure to connect the VM-1 PWB assembly and CP-1 PWB assembly.

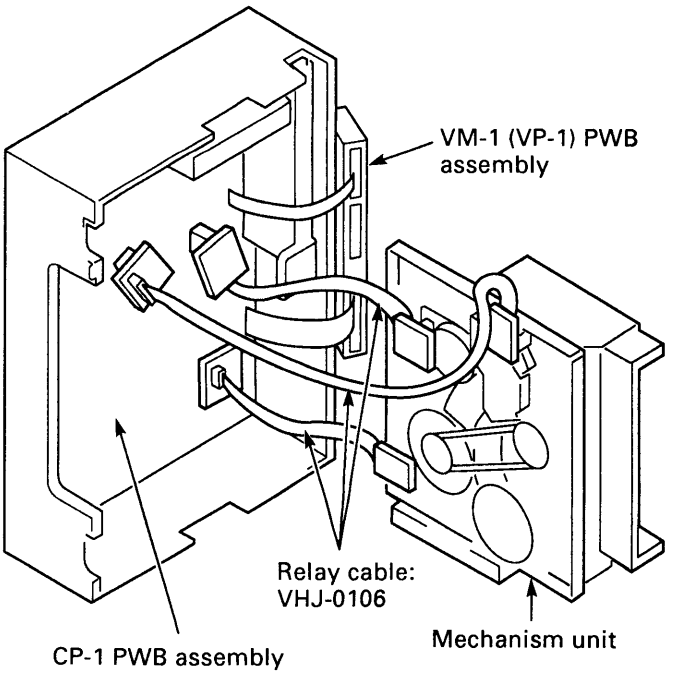


Fig. 1-2-2

2. AN OVERVIEW OF THE MECHANISM

2-1. NAMES OF THE MAIN PARTS

2-1-1. CASSETTE MECHANISM ASSEMBLY

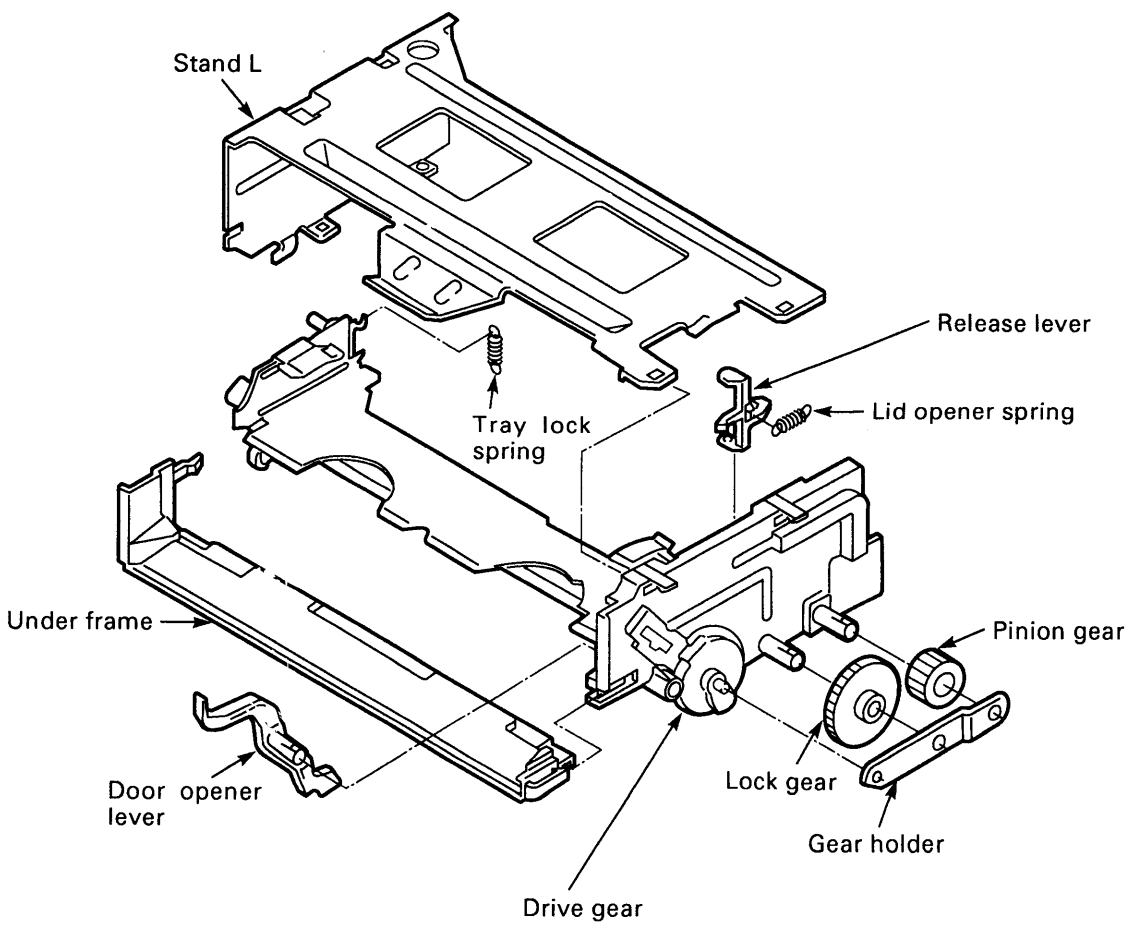


Fig. 2-1-1

2-1-2. TOPVIEW

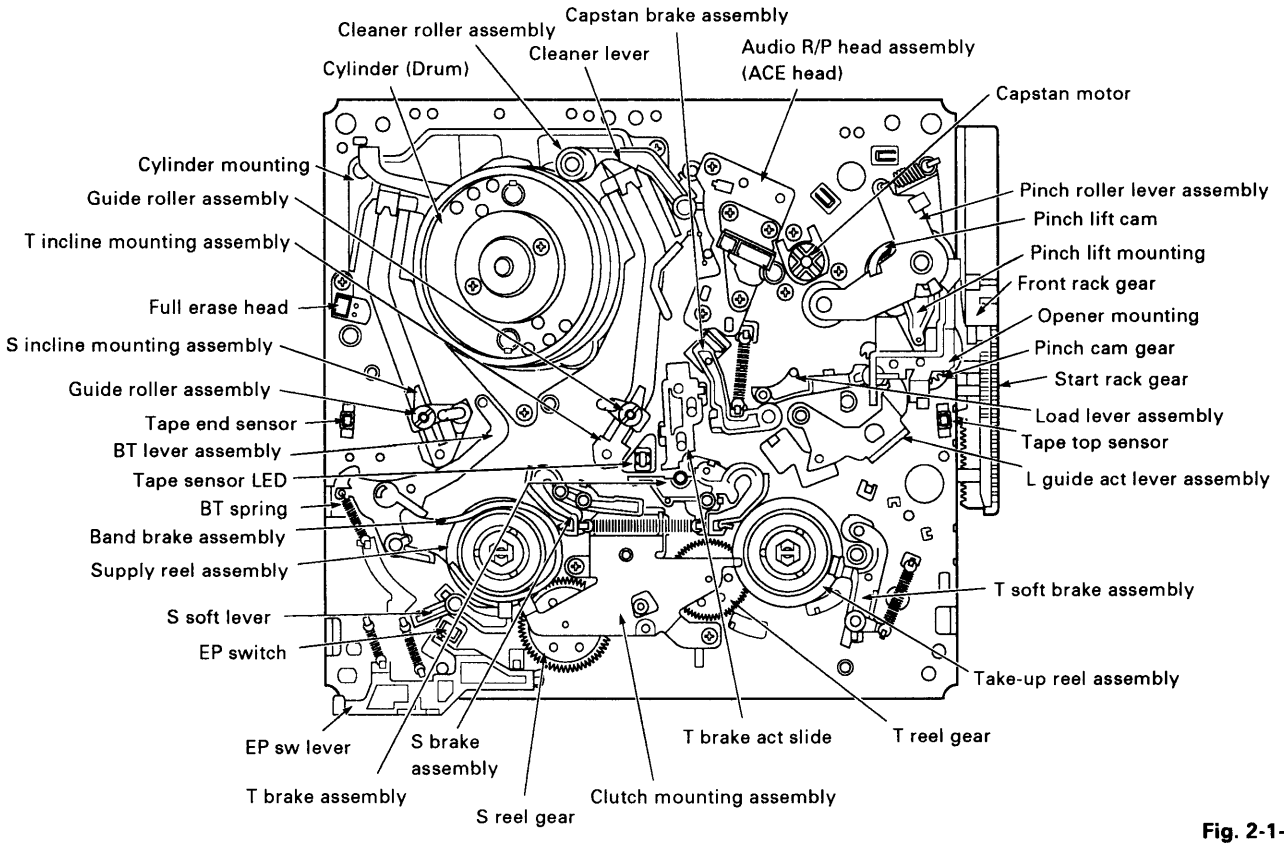


Fig. 2-1-2

2-1-3. UNDERSIDE

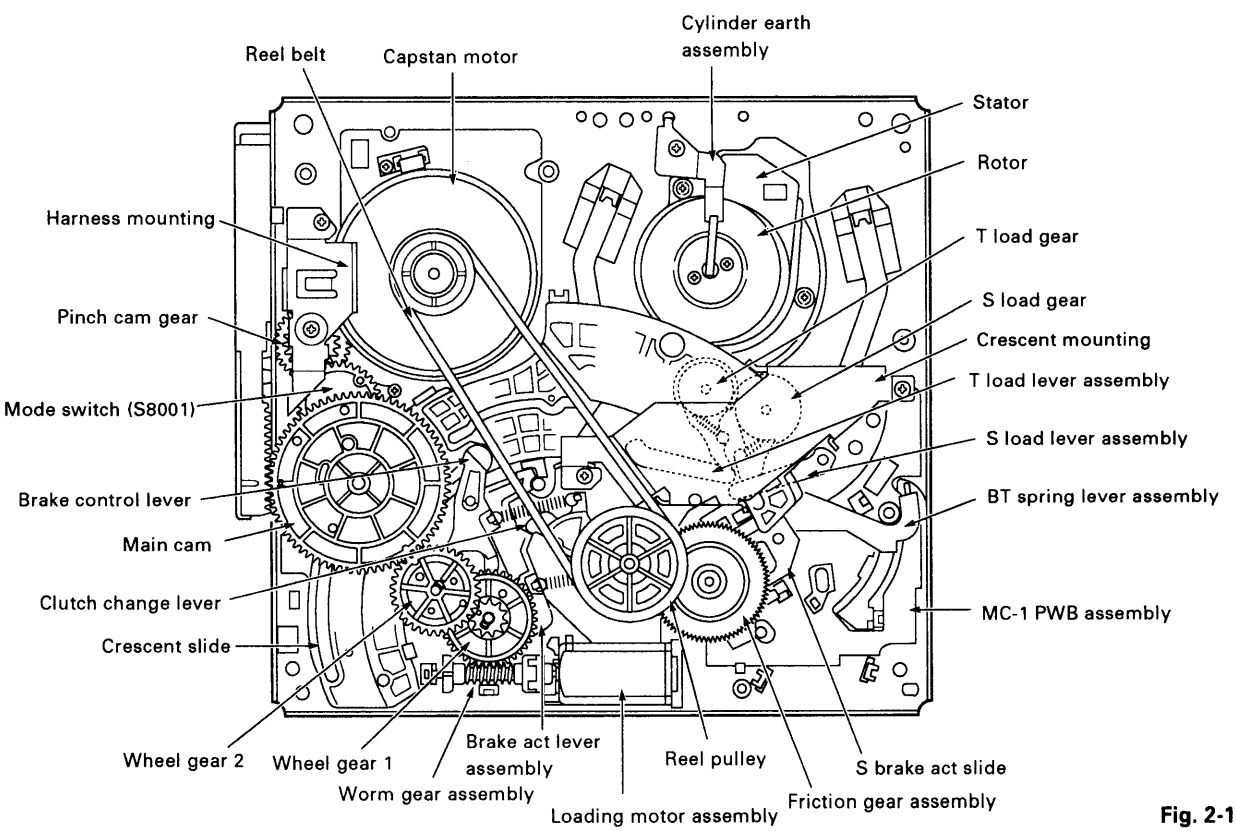


Fig. 2-1-3

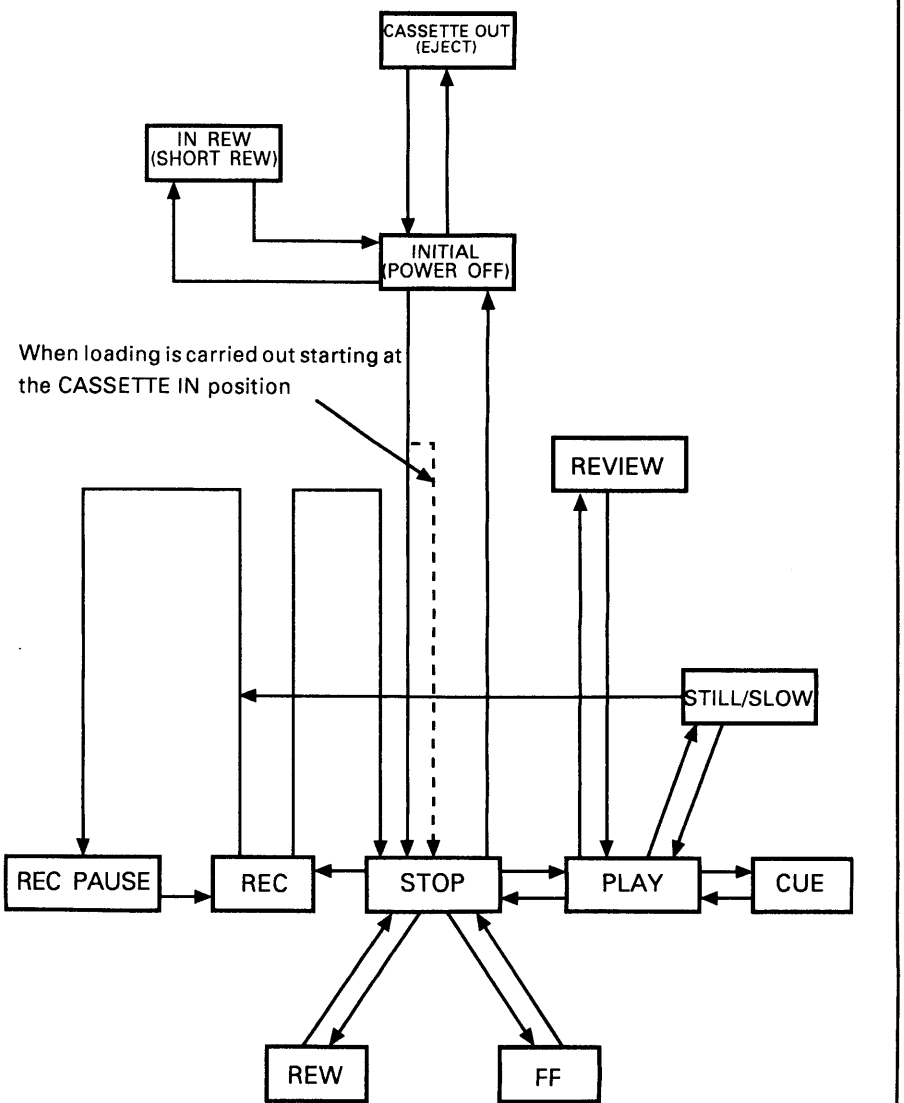
2-2. AN OVERVIEW OF THE MECHANISM MODES

2-2-1. MECHANISM MODE SWITCHING TABLE

NOTE: The letters and figures enclosed in circles in the mechanism mode column are the codes on the crescent slide.

HEX DATA	Mechanism mode
6	EJECT Ⓔ Distinguished by whether the EP switch is ON or OFF. Horizontal shift section.
2	Vertical shift section.
6	IN REW Ⓡ
0	
7	INITIAL ⑦
0	Cleaner roller assembly: ON
1	S/T mounting incline assembly pressure begins.
0	S/T mounting incline assembly pressure ends.
1	REVIEW ①
0	
2	IDLER pos. ② (Pinch roller OFF)
0	
3	STILL/SLOW ③
0	
5	PLAY/STOP ⑤
0	
4	BRAKE pos. ④
0	
6	FF/REW ⑥

The principal mode-switching states of the mechanism



MODE SWITCH OUTPUT TABLE

HEX DATA	SW DATA 1	SW DATA X	SW DATA Y	SW DATA Z	SW DATA 2
0	5.0V	H	H	H	5V
1	5.0V	H	H	L	0V
2	2.5V	H	L	H	5V
3	2.5V	H	L	L	0V
4	3.4V	L	H	H	5V
5	3.4V	L	H	L	0V
6	2.0V	L	L	H	5V
7	2.0V	L	L	L	0V

APPEARANCE OF MODE SWITCH AND RELATIONSHIP BETWEEN MODE POSITIONS

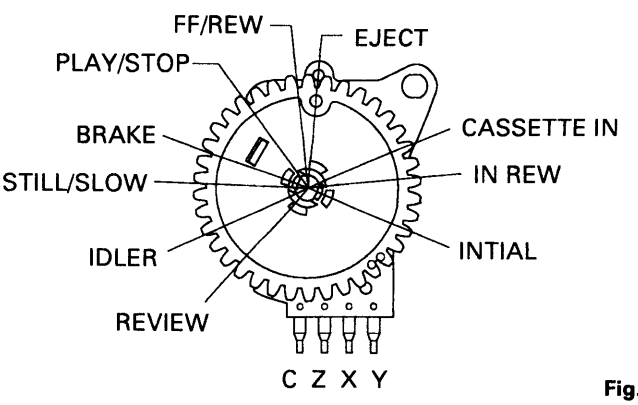


Fig.2-2-1

2-2-2. MOVEMENT CHECK LIST FOR THE MAIN PARTS OF THE MECHANISM

(S): Strength (W): Weakness

Mechanism mode / Principal parts	EJECT	IN REW	INITIAL (POWER OFF)	(LOADING)	(UNLOADING)	REV	IDLER	STILL/SLOW	PLAY/STOP	BRAKE	FF/REW	
T brake assembly	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON/OFF	
S brake assembly	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON/OFF	
T soft brake assembly	OFF	OFF	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	
S soft lever	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	
BT lever assembly	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	
BT spring	OFF	OFF	OFF	OFF	OFF	ON(W)	ON(W)	ON(S)	ON(S)	ON(S)	ON(W)	
Pinch roller lever assembly	UP	UP	UP	UP/ DOWN	DOWN/ UP	ON	OFF	ON	ON	OFF	OFF	
Clutch mounting assembly	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	FF	
Load lever assembly	UNLO	UNLO	LO	LO	LO	LO	LO	LO	LO	LO	LO	
Capstan brake assembly	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	
S and T incline mounting assembly				LO	UNLO							
Cleaner roller assembly	OFF	OFF	OFF	(ON)	(ON)	OFF	OFF	OFF	OFF	OFF	OFF	

2-2-3. HOW TO CHECK THE MECHANISM MODE POSITION

You can tell which mode the mechanism is currently in by looking at the codes and marking-lines on the crescent slide on the underside of the mechanism chassis. The edge of the crescent mounting is used as the reference line, as shown in Fig.2-2-2, and the marking-lines and symbols indicating the mechanism modes are displayed on the crescent slide, which slides against the edge of the crescent mounting. The mechanism mode is read off from the marking-line on the slide crescent which is aligned with the reference-line on the crescent mounting.

Example: In Fig.2-2-2, marking-line 6 is aligned with the reference-line on the crescent mounting, so the mechanism is seen to be in FF/REW mode.

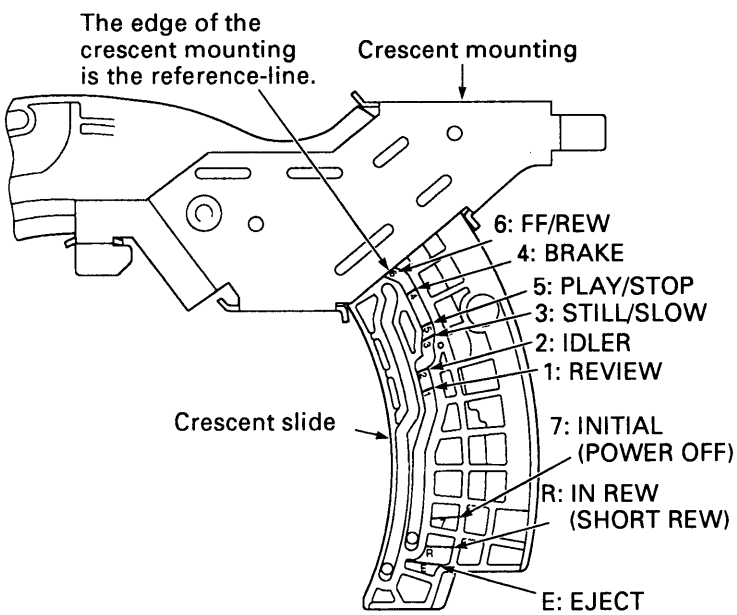


Fig.2-2-2

2-2-4. SELF-DIAGNOSIS DISPLAY

Some models are equipped with the SELF-DIAGNOSIS DISPLAYS function.

Use it as a means of finding out the symptoms and cause of the error before performing repairs.

For details, refer to the separate service manual for the respective models.

3. DISASSEMBLING THE MAIN PARTS OF THE MECHANISM

POINTS TO NOTE

- When fitting the parts of the mechanism, refer to the "Assembly Notes", and proceed in the reverse of dis-assembly order.
- Dis-assembly and assembly should be carried out in EJECT mode unless a movement mode is explicitly specified. EJECT mode is the state in which the cassette tape has been ejected.
- Clamps are used to prevent parts coming loose. When removing a clamp, be careful not to force it, as this can result in damage.

3-1. HOW TO MAKE THE MECHANISM MOVE

In order to check a movement such as front loading, front unloading, tape loading, tape unloading, raising/lowering and pressing the pinch roller, you will need to operate the loading motor. There are two methods of operating the loading motor, and these are explained in sections 3-1-1 and 3-1-2. The above movements can also be performed without operating the loading motor, by following the method explained in section 3-1-3.

3-1-1. HOW TO OPERATE THE LOADING MOTOR USING A DC VOLTAGE SUPPLY (See Fig.3-1-1)

1) Remove the power plug from the socket.
2) Remove the top cover, front cabinet assembly and bottom cover.
3) Supply a DC voltage in the range 5V between the MOTOR (+) wire and the MOTOR (–) wire on the CP-1 PWB assembly. To make the loading motor rotate in the PLAY or FF/REW direction, the positive terminal should be connected to the MOTOR (+) wire, and the negative terminal to the MOTOR (–) wire. To make it rotate in the EJECT direction, connect the positive terminal to the MOTOR (–) wire, and the negative terminal to the MOTOR (+) wire.
   When rotating the loading motor in the EJECT direction with a tape slacken, stop the rotation of the loading motor before beginning front unloading.
   Rotate the capstan motor with your hand, wind the slacked part of the tape, and rotate the loading motor in the EJECT direction again.

NOTE 1: When carrying out front loading, release the lock by pressing down the tray lock lever ⑧ and the lid opener lever ⑨ of the cassette mechanism assembly (shown in Fig.3-2-2) in the direction of the arrow.

NOTE 2: When the loading motor stops rotating, following the completion of an operation such as tape loading or front unloading, switch off the DC voltage supply.

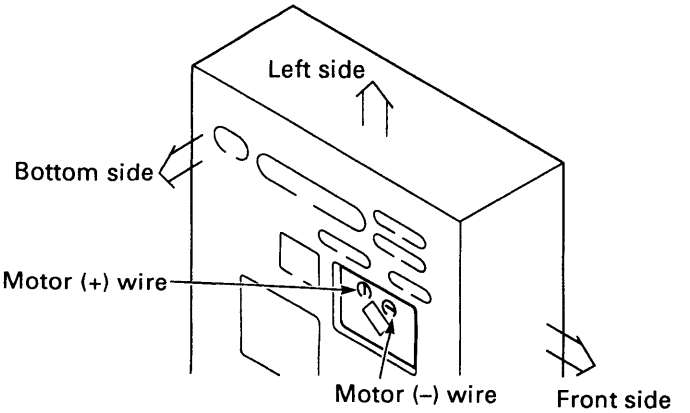


Fig.3-1-1

3-1-2. OPERATING THE LOADING MOTOR BY THE MANUAL METHOD (See Fig.3-1-2)

1) Refer to section 3-2 and install the mechanism unit.
2) Using your finger, turn the loading motor located at the rear of the mechanism unit. For EJECT, turn the loading motor in the direction of the arrow on the loading motor. For PLAY or FF/REW, turn it in the opposite direction.
   When rotating the loading motor in the EJECT direction with a tape slacken, stop the rotation of the loading motor before beginning front unloading.
   Rotate the capstan motor with your hand, wind the slacked part of the tape, and rotate the loading motor in the EJECT direction again.
   When carrying out front loading, release the lock by pressing down the tray lock lever ⑧ and the lid opener lever ⑨ of the cassette mechanism assembly (shown in Fig.3-2-2).

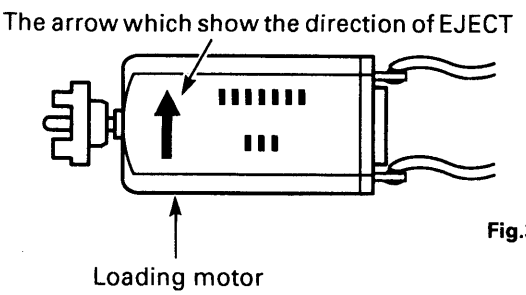


Fig.3-1-2

3-1-3. MAKING THE MECHANISM MOVE USING THE MANUAL METHOD

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-15 and remove the gear wheel 2.
3) If you turn the main cam anticlockwise, the mechanism will switch to a mode such as PLAY or FF/REW. To switch from FF/REW mode to EJECT mode, turn the main cam clockwise.

3-2. MECHANISM UNIT (See Figs. 3-2-1 and 3-2-2)

1) Remove the top cover, bottom cover and front cabinet assembly.
2) Unplug the flat cable ① from the VM-1/VP-1 PWB assembly on the cylinder (drum), and unplug the ACE head connector ③.
3) Remove the screw ②, the two screws ④, then remove the VM-1/VP-1 PWB assembly ⑤, lifting it upwards. The shape of the VM-1/VP-1 PWB assembly and the bracket varies according to the model.
4) Remove the four screws ⑥ and the two screws ⑩, then lift up the mechanism unit. The tray ⑦ will stop you removing the two screws ⑥ on the front, so release the lock by pressing down the tray lock lever ⑧ and the lid opener lever ⑨ shown in Fig.3-2-2, then slide off the tray ⑦. Move the tray by referring to section 3-1 and turn the loading motor in the PLAY direction.

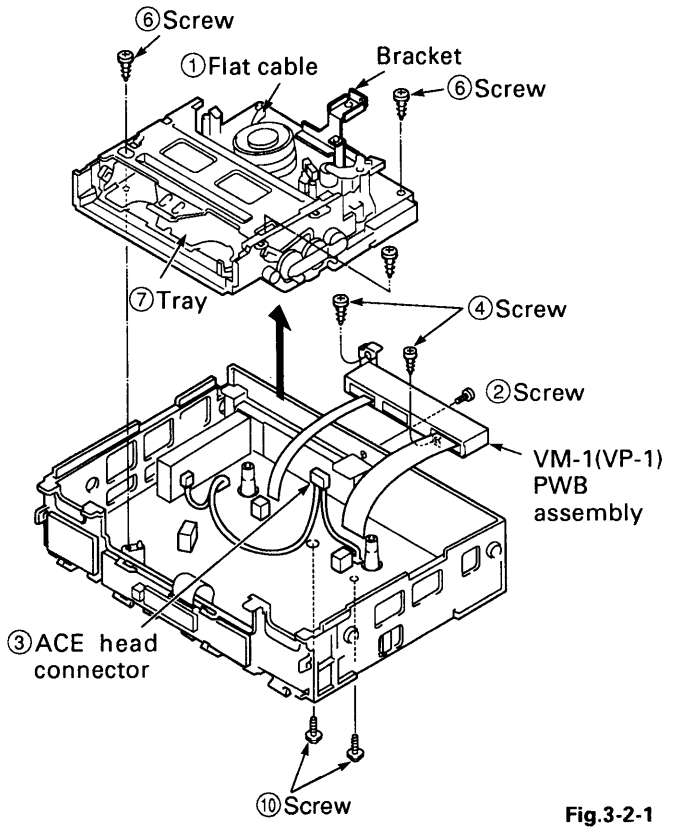


Fig.3-2-1

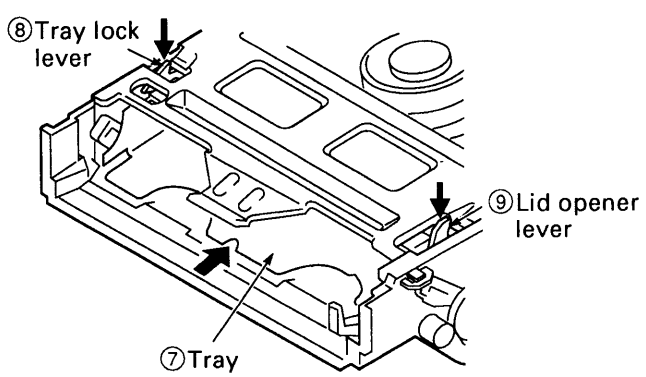


Fig.3-2-2

3-3. CASSETTE DRIVE MECHANISM

3-3-1. CASSETTE MECHANISM ASSEMBLY (See Figs.3-3-1 and 3-3-2)

1) Put the VCR into EJECT mode.
2) Remove the two screws ①.
3) Lift up the back of the cassette mechanism assembly ② slightly, and remove the two hooks ③ on the front.

ASSEMBLY NOTES:

1. The cassette mechanism assembly and the mechanism chassis should both be fitted in EJECT mode.
2. Check that the two hooks ③ have snapped into the mechanism chassis, and make sure that the two holes ④ in the cassette mechanism assembly are aligned with the two dowels ⑤ on the mechanism chassis.
3. Make sure that the big tooth on the pinion gear of the cassette mechanism assembly slots properly into the deepest gap in the start rack gear, as shown in Fig.3-3-2.
4. When fitting the two screws ①, use the torque gauge screwdriver (VHJ-0014). Give the screws a tightening torque of 5 kg/cm.

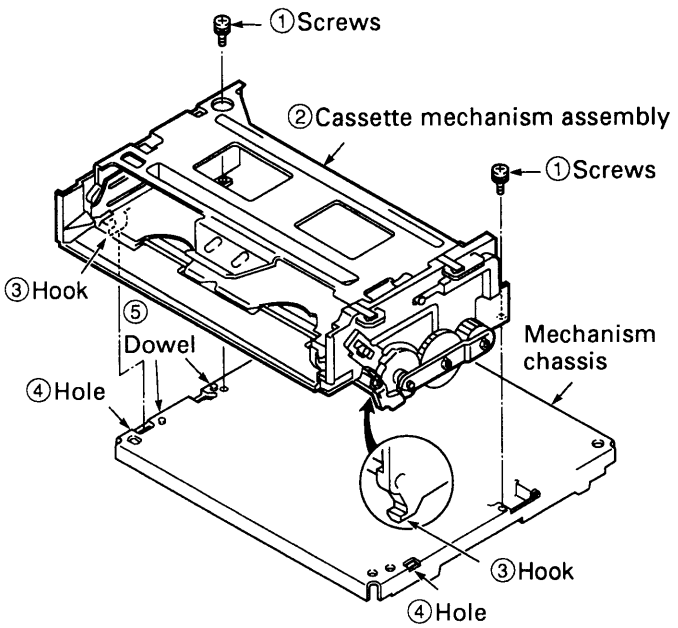


Fig.3-3-1

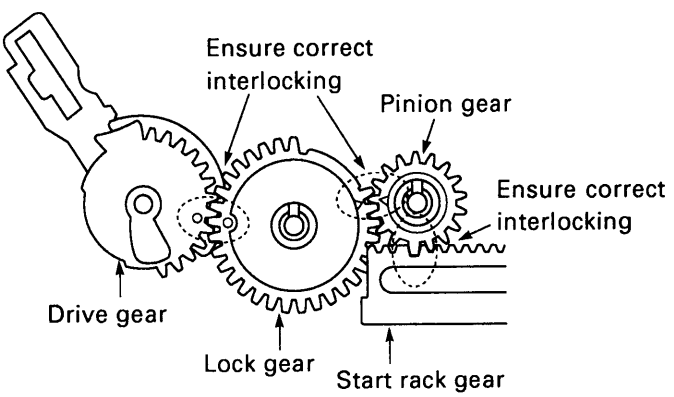


Fig.3-3-2

3-3-2. CASSETTE DRIVE GEAR (See Fig.3-3-3)

1) Refer to section 3-3-1 and remove the cassette mechanism assembly.
2) Remove clamps ① and ②, then remove the gear holder ③.
3) Remove the clamp ①, then remove the pinion gear ④.
4) Remove the clamp ②, then remove the lock gear ⑤.

ASSEMBLY NOTES:

1. Put the tray in the EJECT mode position before fitting any parts.
2. Apply grease (VHJ-0100) to the gear mounting shafts, all the gear teeth, and the cam part of the drive gear ⑥.
3. Ensure that the drive gear, the lock gear and the pinion gear interlock correctly, as shown in Fig.3-3-2.
4. Make sure the clamps ① and ② snap in to the gear holder ③.

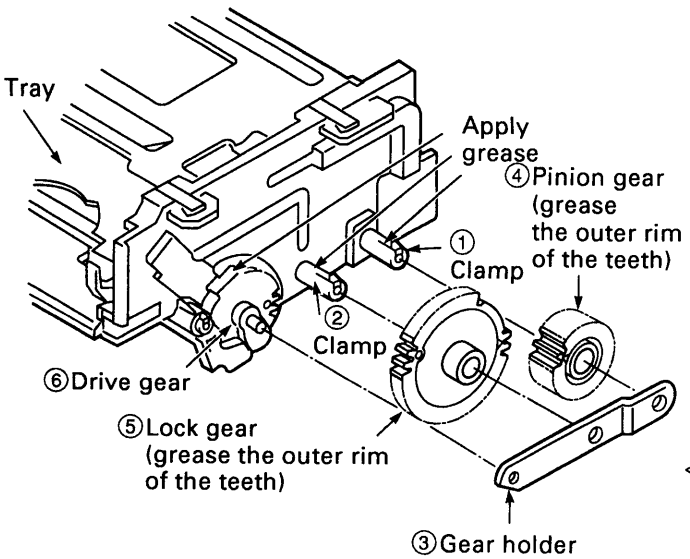


Fig.3-3-3

3-3-3. DOOR OPENER, UNDER FRAME AND STAND L (See Fig.3-3-4)

1) Remove the cassette mechanism assembly, referring to section 3-1.
2) Remove the two clamps ① and take out the under frame ②, pulling it towards you.
3) Press down the tray lock lever ③ and the lid opener lever ④, and loosen the tray ⑤, lifting it away from you. In this state, press the clamp ⑥ and remove the door opener lever ⑦.
4) Remove the two clamps ⑧ and take out the stand L ⑨. Be careful not to exert too much force on the clamps ⑧, as this could cause damage.

ASSEMBLY NOTES:

1. Apply grease (VHJ-0100) to the grooves ⑪ on the stand L, the inside of the hole ⑬ in the drive shaft ⑫, and the mounting hole ⑭ in the door opener lever of the stand R.
2. Before fitting the stand L ⑨, be sure to move the tray ⑤ back as far as the EJECT mode position. Put the two pins ⑩ on the tray ⑤ into the grooves ⑪ on the stand L. Put the drive shaft ⑫ into the hole ⑬.
3. Be sure to fasten the two clamps ① and the clamp ⑥ on the stand R, and to fasten the two clamps ⑧ on the stand L.

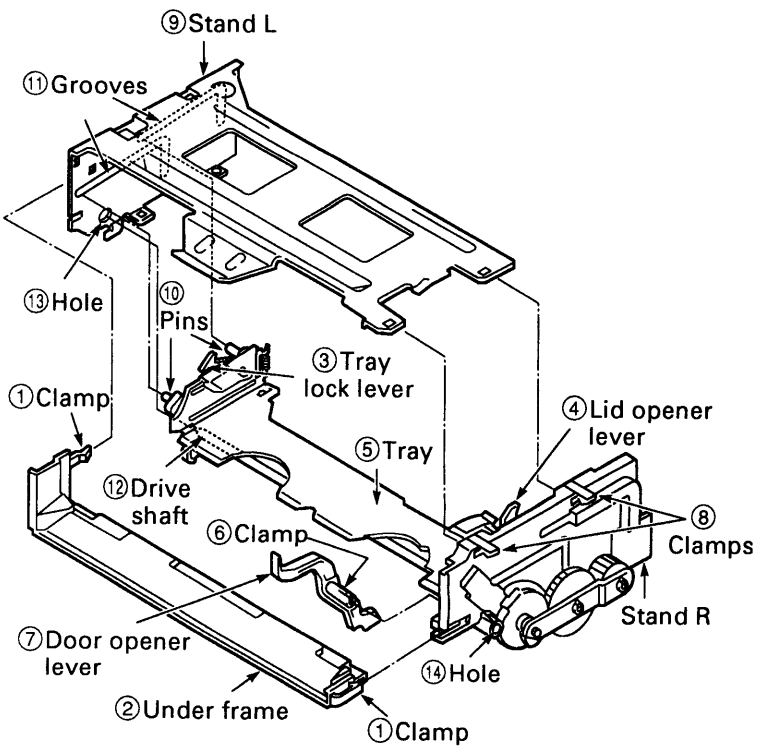


Fig.3-3-4

3-3-4. START RACK GEAR AND FRONT RACK GEAR (See Figs.3-3-5 and 3-3-6)

1) Remove the mechanism unit, referring to section 3-2.
2) Remove the cassette mechanism assembly, referring to section 3-3-1.
3) Remove the special screw ①. When you do this, slide the front rack gear assembly ② towards the front until it stops, then take it off the shaft ③. Take care not to damage the shaft ③.
4) Remove the spring ④.
5) Remove the clamp ⑥ on the front rack gear ⑤, then remove the start rack gear ⑦.

ASSEMBLY NOTES:

1. Apply grease (VHJ-0100) to the front rack gear ⑤ and all over the inside of the groove on the start rack gear ⑦.
2. Align the positioning mark ⑧ on the front rack gear ⑤ with the mark ⑩ on the main cam ⑨.
3. When installing the cassette mechanism assembly, refer to section 3-3-1 and align the start rack gear with the pinion gear.

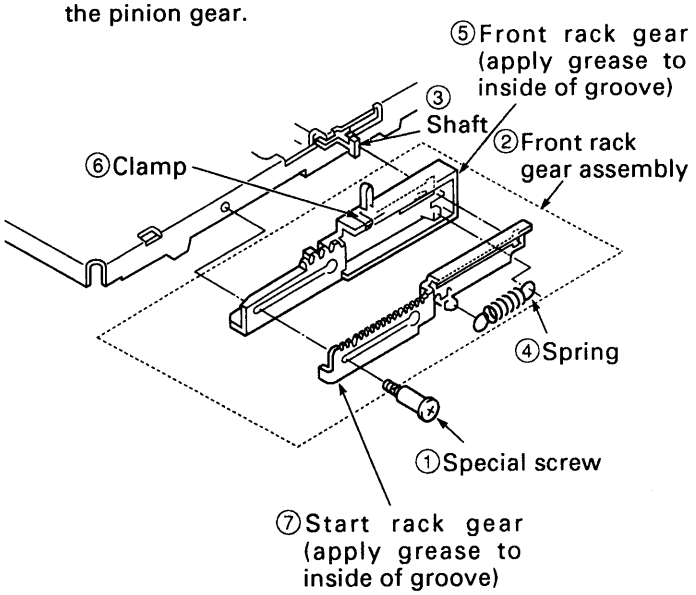

⑤Front rack gear (apply grease to inside of groove)
③ Shaft
②Front rack gear assembly
⑥Clamp
④Spring
①Special screw
⑦Start rack gear (apply grease to inside of groove)

Fig.3-3-5

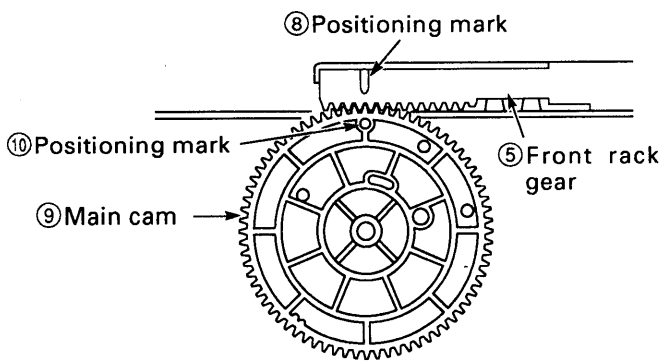


Fig.3-3-6

3-4. CLEANER ROLLER ASSEMBLY (See Fig.3-4-1)

1) Remove the clamp ① and take out the cleaner lever ②. When you do this, be careful not to bend the plastic springs Ⓐ and Ⓑ on the cleaner lever ②.
2) Remove the clamp ③, and take out the cleaner roller assembly ④. Be careful not to touch the sponge on the cleaner roller assembly ④.

ASSEMBLY NOTES:

1. When mounting the cleaner lever ② on the shaft ⑤, press the clamp ① in the direction shown by the arrow, and snap it into the mounting ⑥ on the audio R/P head assembly.

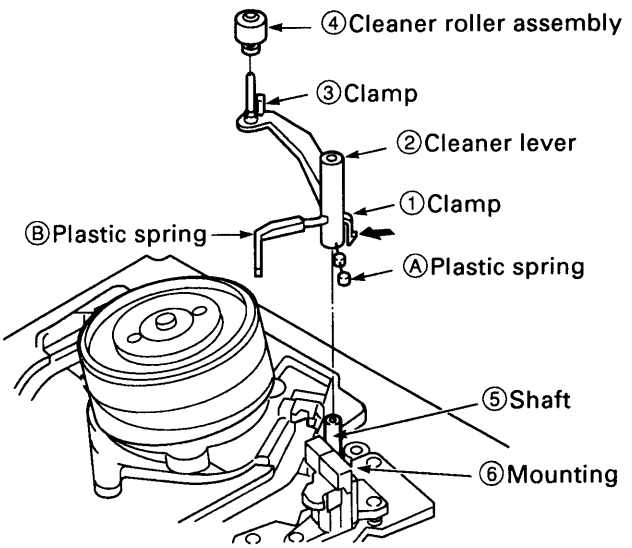


Fig.3-4-1

3-5. CYLINDER (DRUM)

3-5-1. UPPER CYLINDER ASSEMBLY (UPPER DRUM) (See Figs. 3-5-1, 3-5-2, 3-5-3, 3-5-4)

There are two types of cylinders, one that can be disassembled into the upper cylinder (upper drum) and lower cylinder (lower drum) and one that cannot. For that type that cannot, replace the cylinder assembly as a whole.

1) Remove the two screws ① (See Fig.3-5-1).
2) First, tighten the handle② of the video head removing tool (VHJ-0041), then screw the two long screws ③ evenly into the two screw holes ⑤ in the upper cylinder assembly (upper drum) ④ (See Fig. 3-5-2).
3) Hold the tool (VHJ-0041) so that the upper cylinder assembly (upper drum) ④ does not rotate, and at the same time, turn the handle ② clockwise, and remove the upper cylinder assembly (upper drum) ④.
4) Remove the tool (VHJ-0041) from the upper cylinder assembly ④.

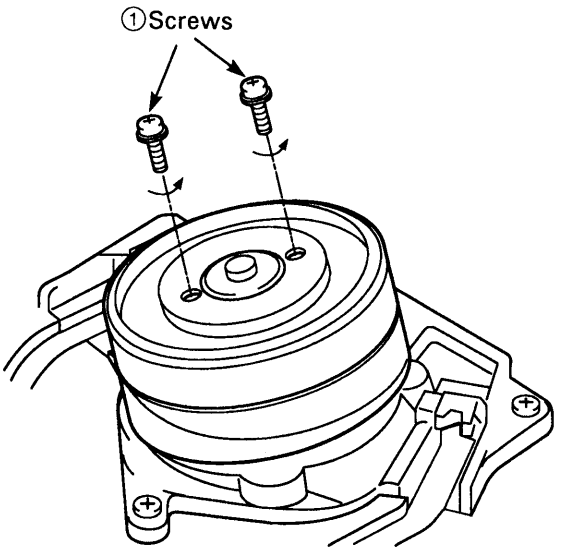


Fig.3-5-1

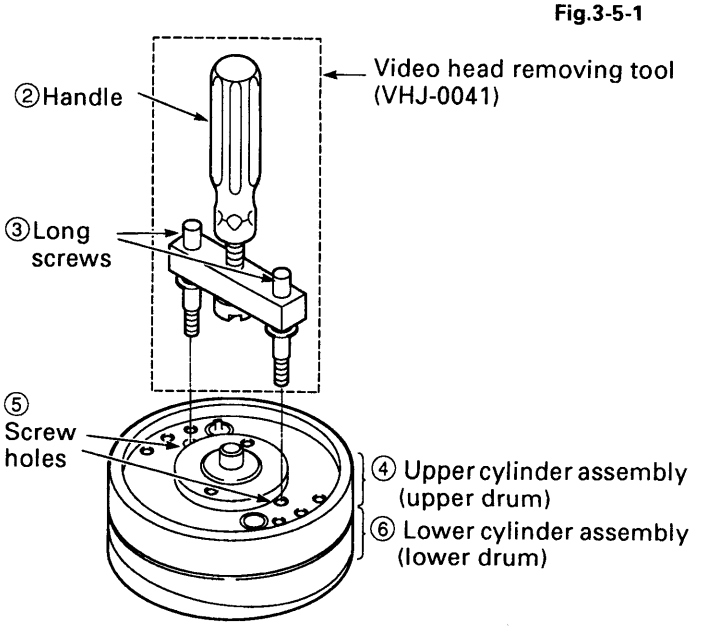


Fig.3-5-2

ASSEMBLY NOTES:

1. When carrying out assembly, the CH-1 head on the upper cylinder assembly (upper drum) ④ and the lower cylinder assembly (lower drum) ⑥ must be aligned. The CH-1 head on the upper cylinder assembly ④ bears a code ⑦ such as 2N2S-V, 2N4N, or 4H6N, as shown in Fig.3-5-3. The CH-1 on the lower cylinder assembly ⑥ has a round hole ⑧, as shown in Fig.3-5-4. Assemble the parts so that the round hole ⑧ is next to the code ⑦ on the upper cylinder assembly.
2. Be careful not to scratch the tape path surface of the cylinder. After replacing the cylinder, clean the tape path surface of the cylinder.
3. After replacing the upper cylinder assembly, do the tape path adjustment as instructed in section 4-3 and do the swithching position adjustment of the servo circuit.

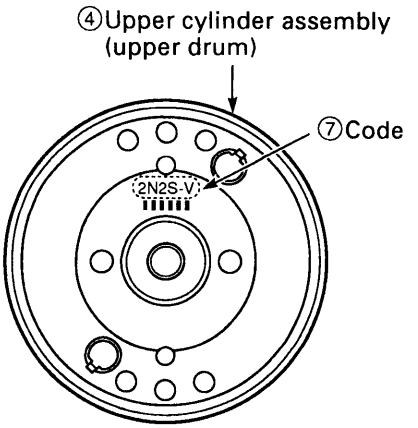
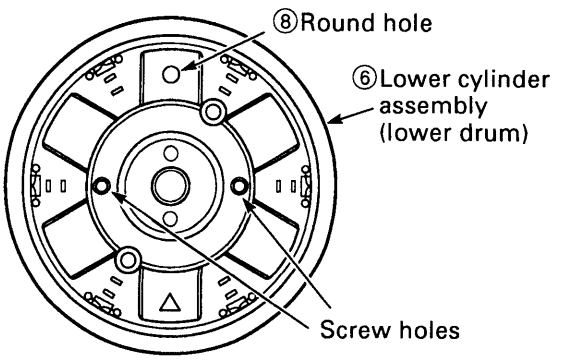


Fig.3-5-3

[EXCEPT FOR 2-HEAD MONAURAL MODELS]



[2-HEAD MONAURAL MODELS ONLY]

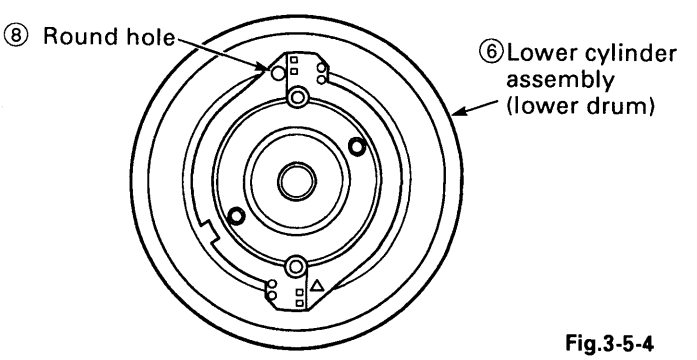


Fig.3-5-4

3-5-2. CYLINDER (DRUM) UNIT (See Fig.3-5-5)

1) Put the mechanism into EJECT mode.
2) Refer to section 3-2 and remove the VM-1/VP-1 PWB assembly
3) Refer to section 3-4 and remove the cleaner lever.
4) Remove the two screws ① and take off the bracket ②. The bracket shape varies according to the model.
5) Remove the three screws ③. Taking care not to scratch or soil the tape path surface of the cylinder (drum), lift the mounting cylinder ④ slightly, and keeping it raised.

ASSEMBLY NOTES:

1. Apply grease (VHJ-0100) to the rails (front and rear) of the cylinder mounting ④ (grease the parts which come in contact with the S and T incline mounting assembly).
2. Align the two dowels ⑥ on the mounting cylinder ④ with the two holes ⑦ on the mechanism chassis. Check that connector is inserted in the CP-1 PWB assembly.
3. After assembly, clean the tape path surface of the cylinder (drum).
4. After replacing the cylinder unit, do the tape path adjustment as instructed in section 4-3, and do the switching position adjustment of the servo circuit.

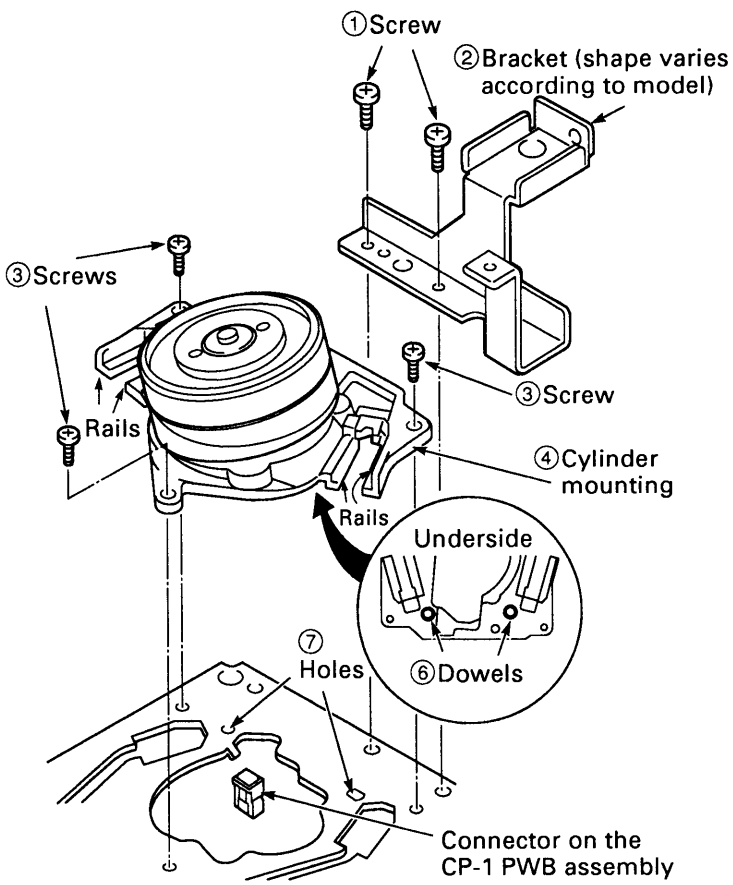


Fig.3-5-5

3-5-3. CYLINDER MOTOR (ROTOR AND STATOR) (See Fig.3-5-6)

1) Refer to section 3-5-2 and remove the cylinder unit.
2) If you have removed the mechanism unit, remove the screw ① and remove the cylinder earth assembly ②.
3) Remove the two screws ③, the rotor ④ and the spacer ⑧.
4) Remove the three screws ⑤ and the stator ⑥.

ASSEMBLY NOTES:

1. When fitting the rotor ④, align the long hole ⑨ -beside the triangular mark on the rotor ④ - with the hole ⑩ in the rotor disk.
2. When fitting the screws ③ and ⑤, use the torque gauge screwdriver (VHJ-0014). give the screws a tightening torque of 3 kg/cm.
3. Align the dowel ⑪ on the cylinder earth assembly ② with the hole ⑫ in the chassis.
4. If you have removed the cylinder unit, after assembly, do the tape path adjustment as instructed in section 4-3, and do the switching position adjustment of the servo circuit.

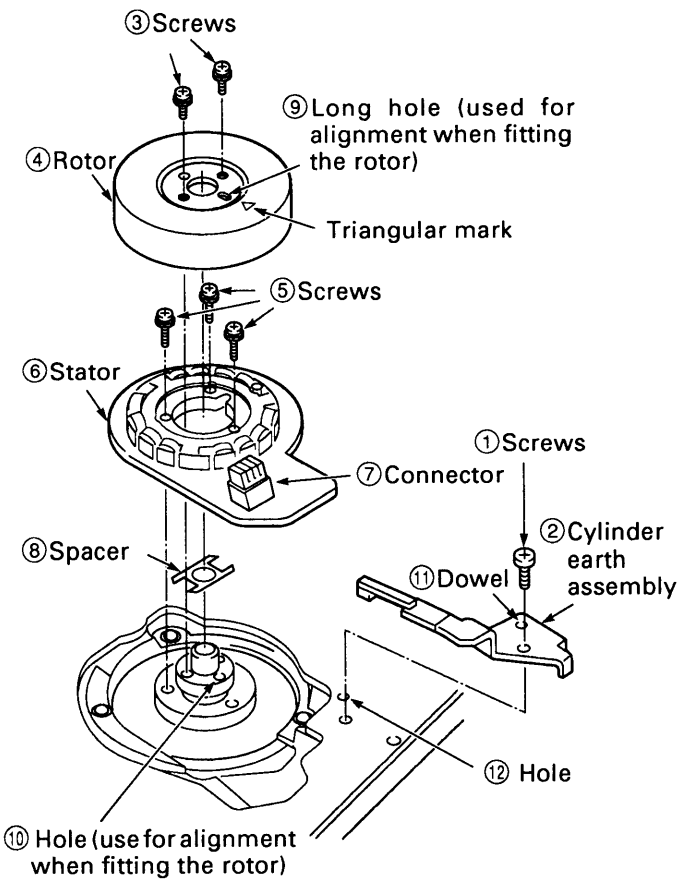


Fig.3-5-6

3-5-4. CYLINDER ASSEMBLY (See Fig.3-5-7)

1) Refer to sections 3-5-2 and 3-5-3, and remove the cylinder unit, the rotor, and the stator.
2) Remove the three screws① and the cylinder assembly ②.

ASSEMBLY NOTES:

1. Be careful not to scratch or soil the top of the cylinder. After fitting the cylinder, clean the surface.
2. Align the cylinder assembly ② with the two dowels ④ on the cylinder mounting ③.
3. After fitting the cylinder assembly, do the tape path adjustment as instructed in section 4-3 and do the switching position adjustment of the servo circuit.

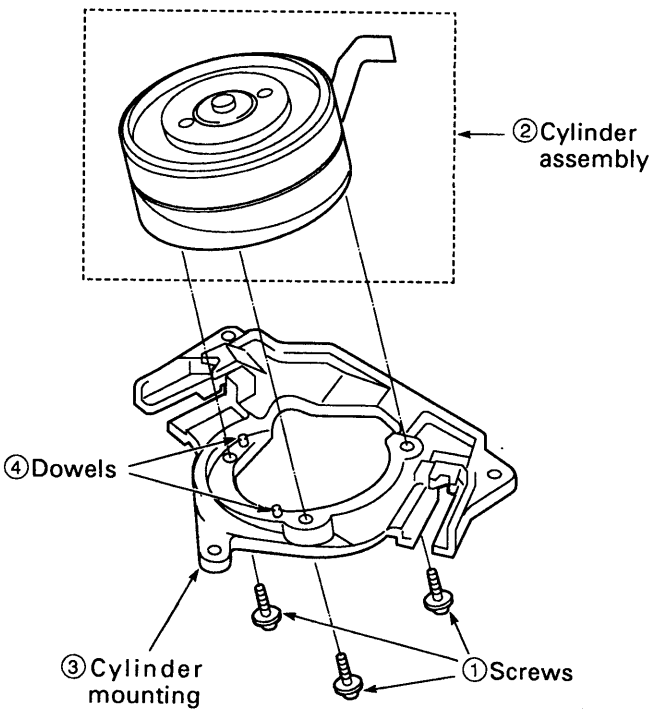


Fig.3-5-7

3-6. FE HEAD AND ACE HEAD

3-6-1. AUDIO R/P HEAD ASSEMBLY (ACE HEAD) (See Fig.3-6-1)

1) Unplug the connector from the audio R/P head assembly (ACE head).
2) Remove the two screws ① and the audio R/P head assembly (ACE head) ②.

ASSEMBLY NOTES:

1. Align the hole ③ on the audio R/P head assembly (ACE head) with the pin ④ on the chassis unit.
2. After assembly, check that the clamp ⑤ on the cleaner roller assembly has snapped into the mounting of the audio R/P head assembly (ACE head) ②.
3. After assembly, clean the surface of the head with a soft cloth or chamois.
4. After assembly, refer to section 4-3, and adjust the head height, the azimuth and the tracking (X) position.

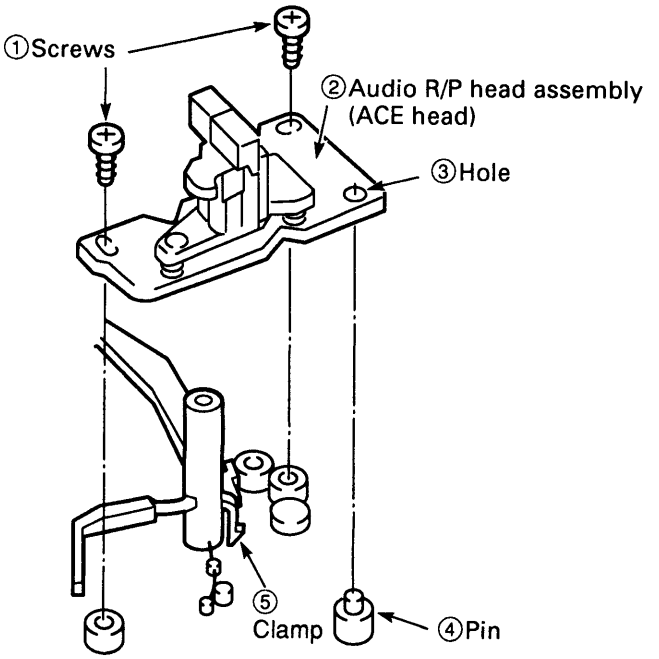


Fig.3-6-1

3-6-2. FULL ERASE HEAD (See Fig.3-6-2)

1) Unplug the connector from the full erase head ①.
2) Remove the screw ② and the full erase head ①.

ASSEMBLY NOTE:

1. After assembly, clean the full erase head ①.

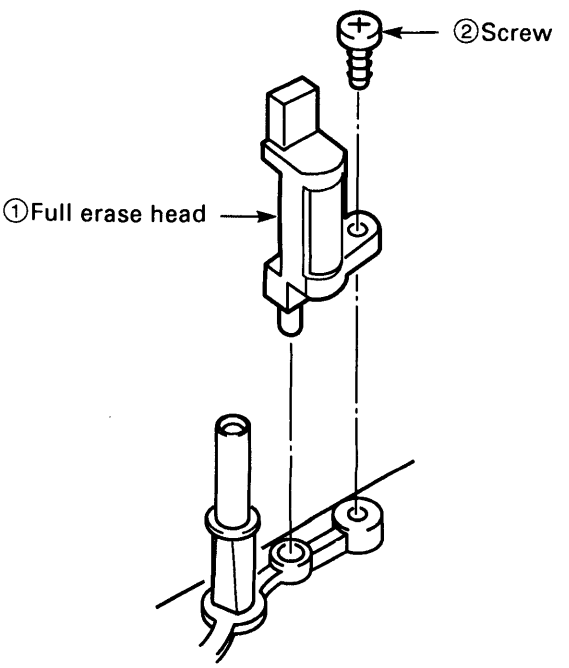


Fig.3-6-2

3-7. CAPSTAN MOTOR

3-7-1. CAPSTAN MOTOR (See Fig.3-7-1)

1) Refer to section 3-2, then remove the mechanism unit.
2) Remove the two screws ②, then remove the harness mounting ①.
3) Remove the reel belt ③.
4) Remove the three screws ⑤ and the capstan motor ⑥.

ASSEMBLY NOTES:

1. Check that connector ④ is inserted in the CP-1 PWB assembly.
2. When fitting the three screws ⑤, use the torque gauge screwdriver (VHJ-0014). Give the screws a tightening torque of 3.5 kg/cm.
3. After assembly, clean the capstan shaft with a soft cloth or chamois.

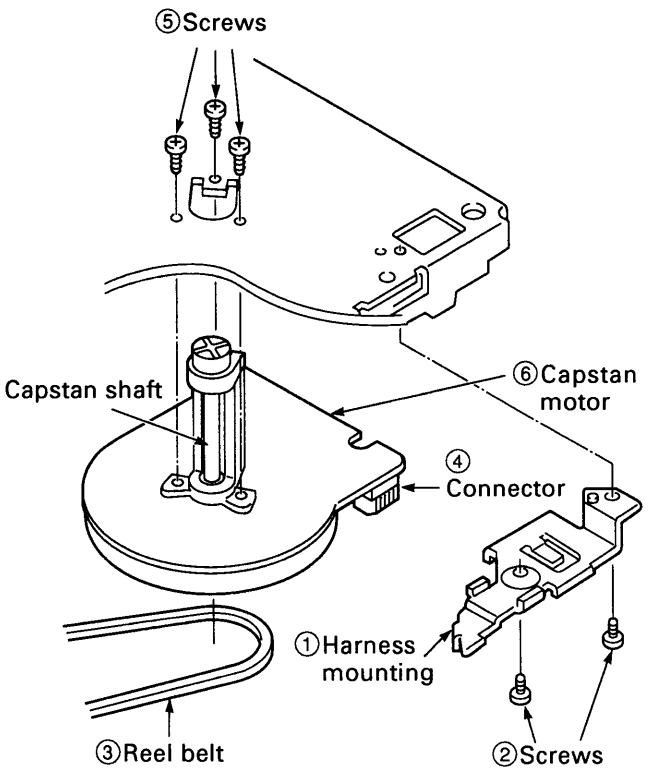


Fig. 3-7-1

3-7-2. CAPSTAN BRAKE ASSEMBLY (See Fig.3-7-2)

1) Remove the spring ①.
2) Remove the clamp ②, then remove the capstan brake assembly ③.

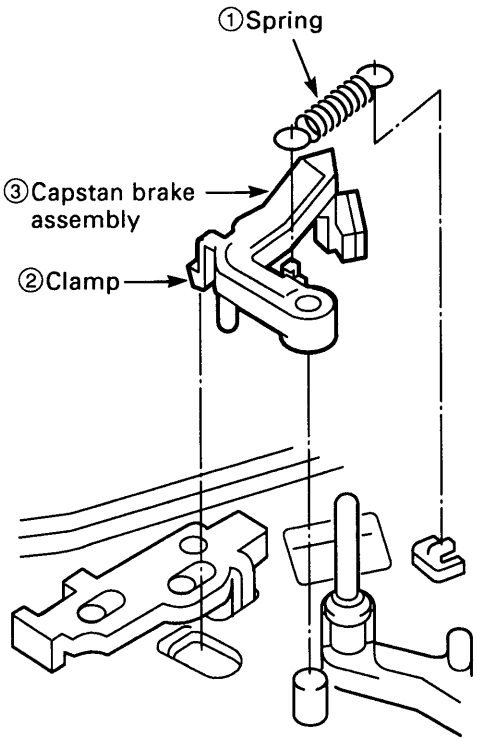


Fig.3-7-2

3-8. LOADING MOTOR ASSEMBLY AND WORM GEAR ASSEMBLY (See Fig.3-8-1)

1) Refer to section 3-2 and remove the mechanism unit.
2) Remove the soldering on the lead wires② of the loading motor assembly from the MC-1 PWB assembly. When you do this, be careful not to let the soldering iron touch any other parts.
3) Press the clamp③, and remove the loading motor assembly① and the damper④. Be careful not to exert too much force on the clamp③.
4) Remove the worm gear assembly⑤. To maintain performance, do not dis-assemble the worm gear assembly⑤.

ASSEMBLY NOTES:

1. Apply grease (VHJ-0010) to the teeth of the worm gear assembly.
2. Check that the clamps③ and⑥ are securing the loading motor assembly.
3. Check the polarity of the lead wires② (the orange wire is the positive terminal, and the gray wire is the negative terminal). After soldering the lead wires②, adjust them so that they do not touch the friction gear assembly.

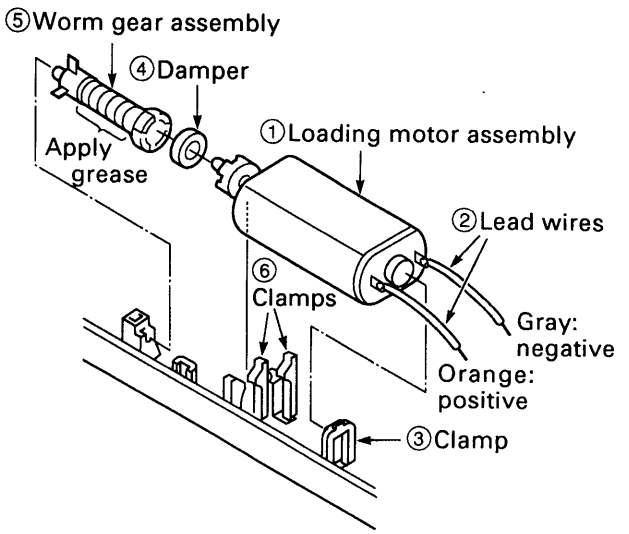


Fig.3-8-1

3-9. PINCH ROLLER PRESSURE MECHANISM

3-9-1. PINCH ROLLER LEVER ASSEMBLY (See Fig.3-9-1)

1) Remove the clamp ①, then remove the pinch lift mounting②.
2) Remove the spring③, then remove the pinch roller lever assembly④ off the pinch lift mounting②. Before you do this, align the Indentation⑤ on the pinch roller lever assembly④ with the clamp⑥ on the pinch lift mounting②.

ASSEMBLY NOTE:

1. Be careful to keep the surface of the pinch roller free of dust and dirt.

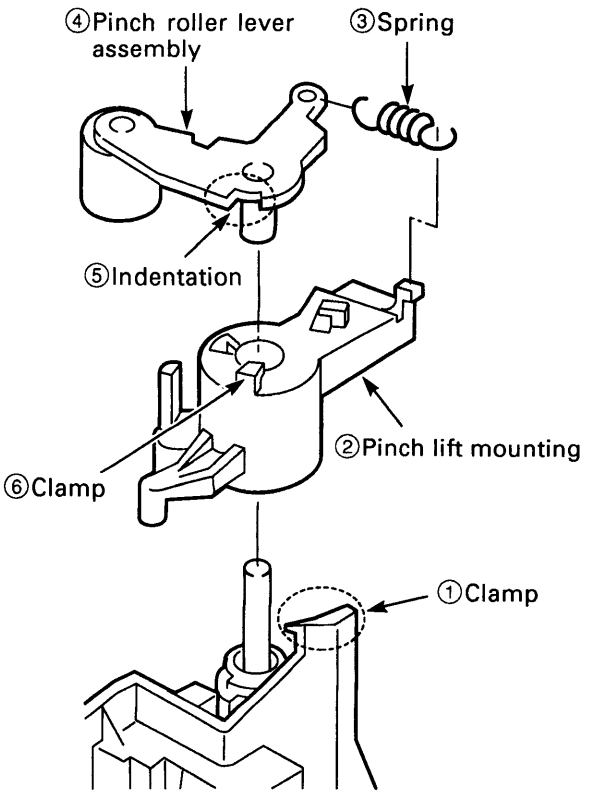


Fig.3-9-1

3-9-2. PINCH LIFT CAM AND PINCH CAM GEAR (See Figs.3-9-2 and 3-9-3)

1) Refer to section 3-2 and remove the mechanism unit. When you do this, make sure the mechanism is in EJECT mode.
2) Refer to section 3-9-1 and remove the pinch roller lever assembly.
3) After removing the screw ①, undo the three clamps ②, then remove the opener mounting ③.
4) Remove the clamp ④ and the pinch lift cam ⑤.
5) Remove the pinch cam gear ⑥.

ASSEMBLY NOTES:

1. Apply grease (VHJ-0100) around the shaft ⑦, all over the teeth Ⓑ of the pinch cam gear ⑥, all over the teeth of the pinch lift cam ⑤, all over the cam grooves Ⓐ, and all over the "V Part Ⓒ" of the opener mounting ③. Apply grease (VHJ-0101) to the outside of the shaft ⑧ and all over the top cam Ⓓ of the pinch cam gear ⑥.
2. Check that the positioning mark ⑩ on the mode switch ⑨ is aligned with the arrow ⑪ on the MC-1 PWB assembly, as shown in Fig.3-9-3. Then align the triangular mark ⑫ on the pinch cam gear ⑥ with the arrow ⑪ on the MC-1 PWB assembly. After that, align the round hole ⑬ on the pinch lift cam ⑤ with the indentation ⑭ on the pinch cam gear ⑥.
   If you have carried out the above alignments and the pinch roller will still not move up and down or perform the pressing movement correctly, refer to section 3-15 and check the alignment of the gear wheels 1 and 2, the main cam, and the mode switch.

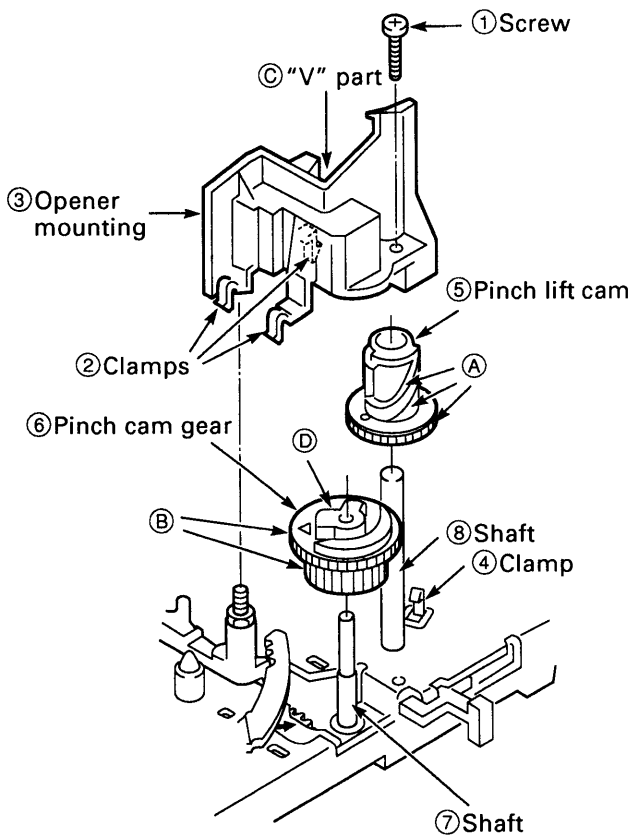


Fig.3-9-2

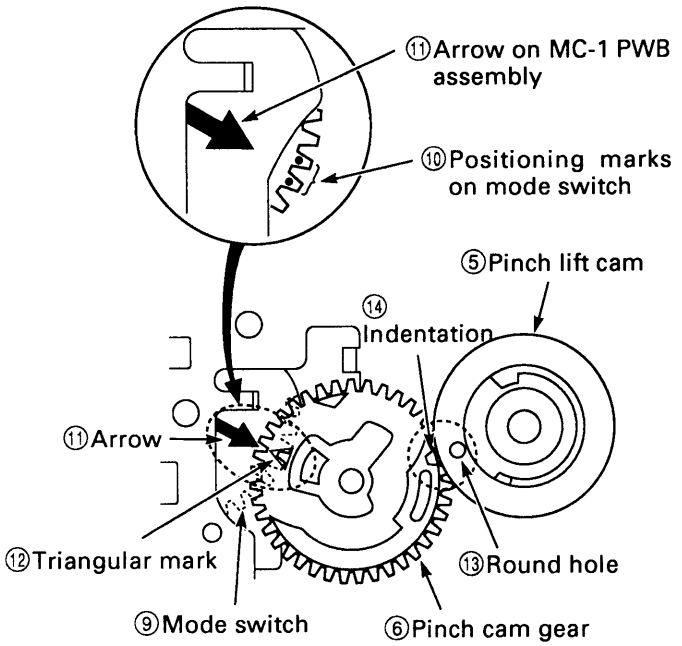


Fig.3-9-3

3-10. L GUIDE LEVER ASSEMBLY AND LOAD LEVER ASSEMBLY (See Figs.3-10-1)

1) Refer to section 3-3 and remove the cassette mechanism assembly.
2) Refer to sections 3-9-1 and 3-9-2, then remove the pinch roller lever assembly and the opener mounting.
3) After removing the washer ④, remove the L guide act lever assembly ⑤.
4) Remove the special nut ⑥, then remove the load lever assembly ⑦ and the L guide lever spring ⑧.

ASSEMBLY NOTES:

1) Apply grease (VHJ-0100) to the toothed area Ⓐ of the L guide act lever assembly ⑤ and around the shafts ⑨ and ⑩.
2) Refer to section 4-3 and adjust the height of the load lever assembly.
3) Hook the L guide lever spring ⑧ into the stopper ⑬ and load lever assembly ⑦ shown in Fig. A.
4) Put the pin ⑪ of the L guide act lever assembly into the cam groove ⑫ of the crescent slide.

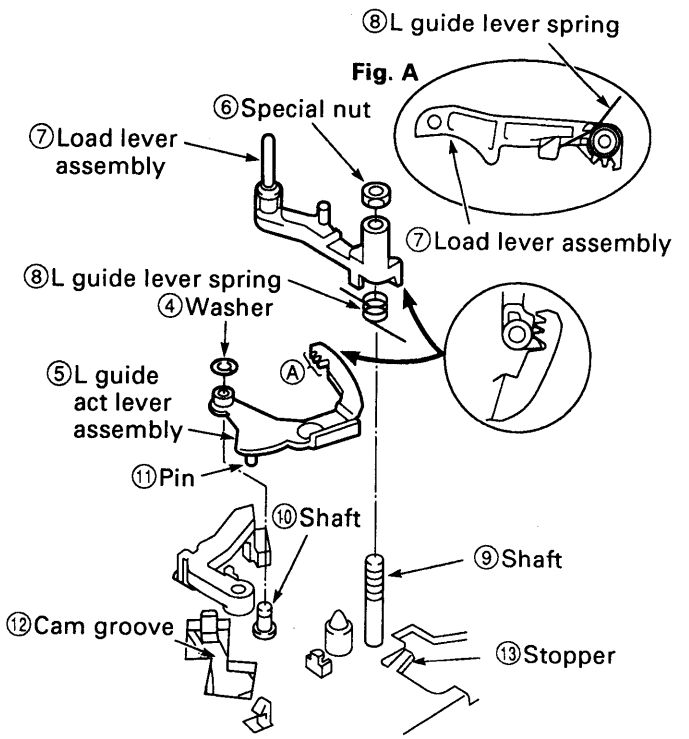


Fig.3-10-1

3-11. BT LEVER ASSEMBLY (See Fig.3-11-1)

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-3-1 and remove the cassette mechanism assembly.
3) Remove the BT spring ①.
4) Remove the clamp ② on the underside of the mechanism chassis, then remove the BT lever assembly ③.
5) Remove the clamp ⑤ on the band brake assembly ④. Then, as shown in Fig. A, align the other end of the band brake assembly with the protruding parts of the BT lever assembly ③ before removing it.

ASSEMBLY NOTES:

1. When fitting the BT lever assembly ③, be careful not to bend the stopper ⑥ or the S incline mounting assembly ⑦ out of shape by knocking it against them.
2. Hook the long hook of the BT spring ① into the BT lever assembly ③, as shown in Fig. B.
3. After assembly, make sure that the mountings on both ends of the band brake assembly ④ are positioned as shown in Fig. C.
4. After assembly, refer to section 4-2-1, and make the appropriate adjustment.

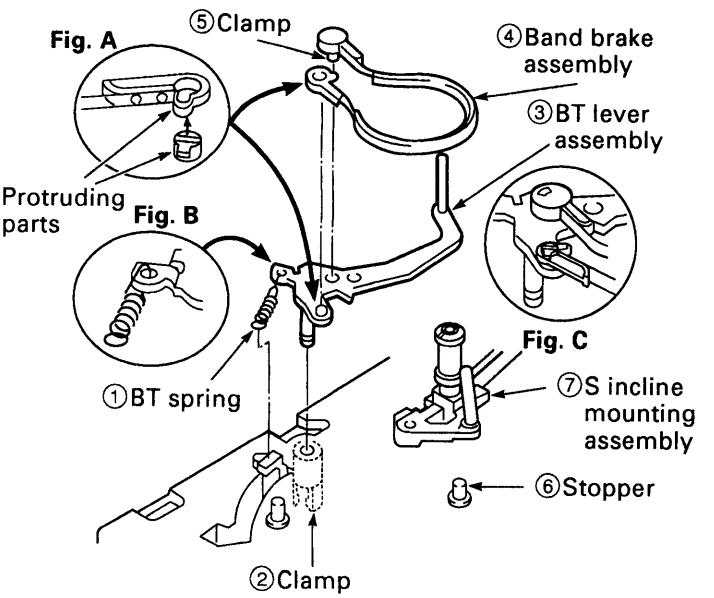


Fig.3-11-1

3-12. REEL DRIVE MECHANISM

3-12-1. REEL BELT, REEL PULLEY, FRICTION GEAR ASSEMBLY AND CLUTCH CHANGE LEVER (See Fig.3-12-1)

1) Refer to section 3-2 and remove the mechanism unit.
2) Remove the reel belt ① from the reel pulley ②.
3) Take off the washer ③ and remove the reel pulley ②.
4) Take off the washer ④ and remove the friction gear assembly ⑤.
5) Remove the clutch change spring ⑥.
6) remove the clamp ⑦ gripping the top of the mechanism chassis, then remove the clutch change lever ⑧.

ASSEMBLY NOTES:

1. After cleaning the shafts ⑨ and ⑩, apply a drop of oil (VHJ-0099) to each.
2. Be careful not to get any grease on the reel belt ①.

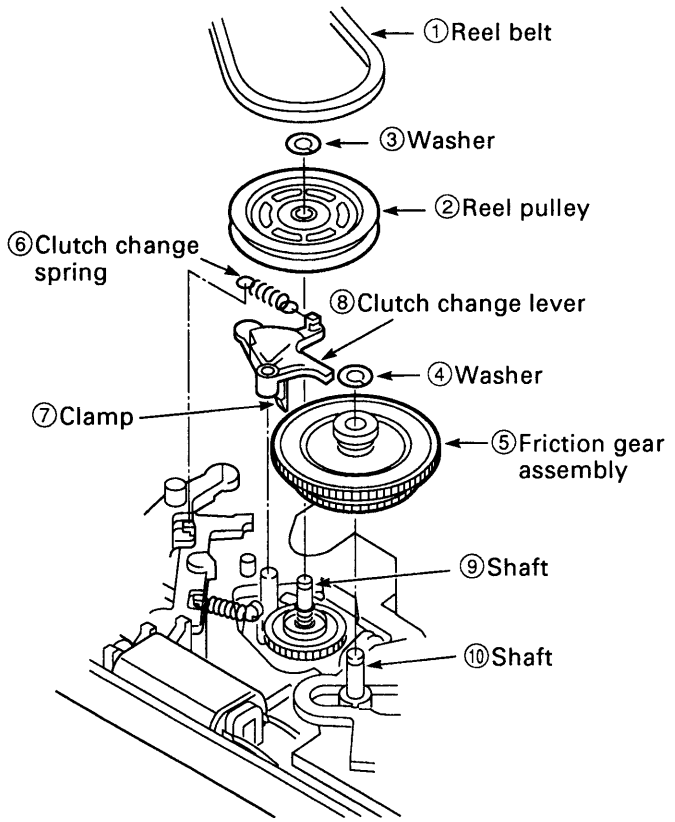


Fig.3-12-1

3-12-2. CLUTCH MOUNTING ASSEMBLY (See Fig.3-12-2)

1) Refer to section 3-3-1 and remove the cassette mechanism assembly.
2) Refer to section 3-12-1 and remove the reel pulley.
3) Remove the two screws ①, then remove the clutch mounting assembly ②.

ASSEMBLY NOTES:

1. Align the two holes ③ with the shafts ④ and ⑤. Be careful not to press part A of the clutch mounting assembly ② against the band brake assembly.
2. After assembly, make sure that the clamp on the clutch change lever has snapped into the chassis.

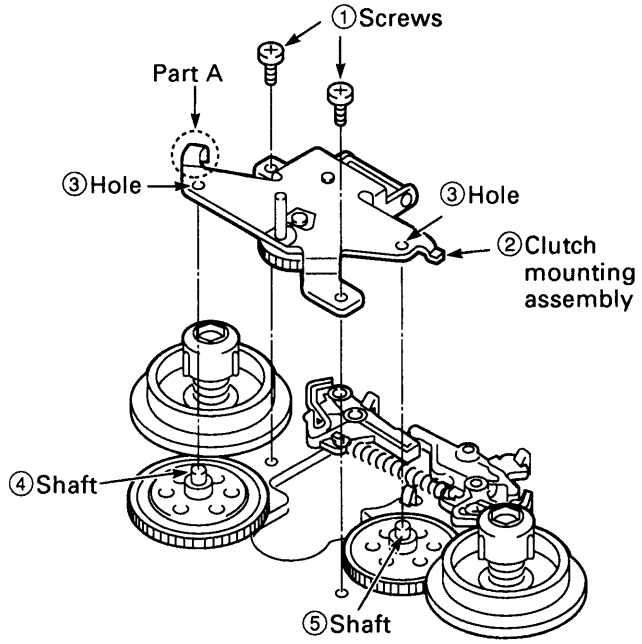


Fig.3-12-2

3-12-3. S SOFT LEVER, SUPPLY REEL ASSEMBLY AND S REEL GEAR (See Fig.3-12-3)

1) Remove the S soft spring ①.
2) Remove the clamp ②, then remove the S soft lever ③.
3) Refer to section 3-12-2 and remove the clutch mounting assembly.
4) Refer to section 3-11 and remove the band brake assembly, then remove the supply reel assembly ④ and the S reel gear ⑤.

ASSEMBLY NOTES:

1. After cleaning the shafts ⑥ and ⑦, apply a drop of oil (VHJ-0099) to each.
2. After assembly, clean the side of the supply reel assembly ④.

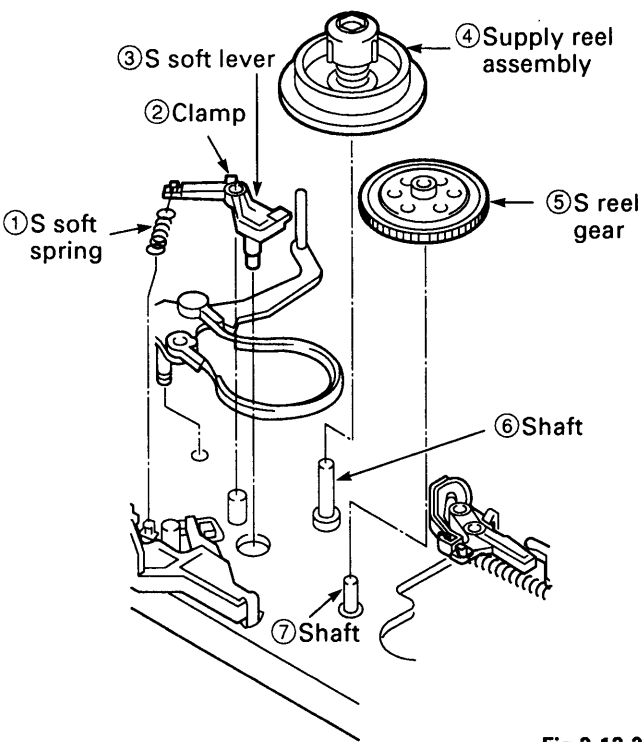


Fig.3-12-3

3-12-4. T SOFT BRAKE ASSEMBLY, TAKE UP REEL ASSEMBLY, T REEL GEAR (See Fig.3-12-4)

1) Remove the T soft spring ①.
2) Remove the clamp ②, then remove the T soft brake assembly ③.
3) Refer to section 3-12-2 and remove the clutch mounting assembly.
4) Pressing the T brake assembly ④ in the direction of the arrow, remove the take up reel assembly ⑤ and the T reel gear ⑥.

ASSEMBLY NOTE:

1. After cleaning the shafts ⑦ and ⑧, apply a drop of oil (VHJ-0099) to each.

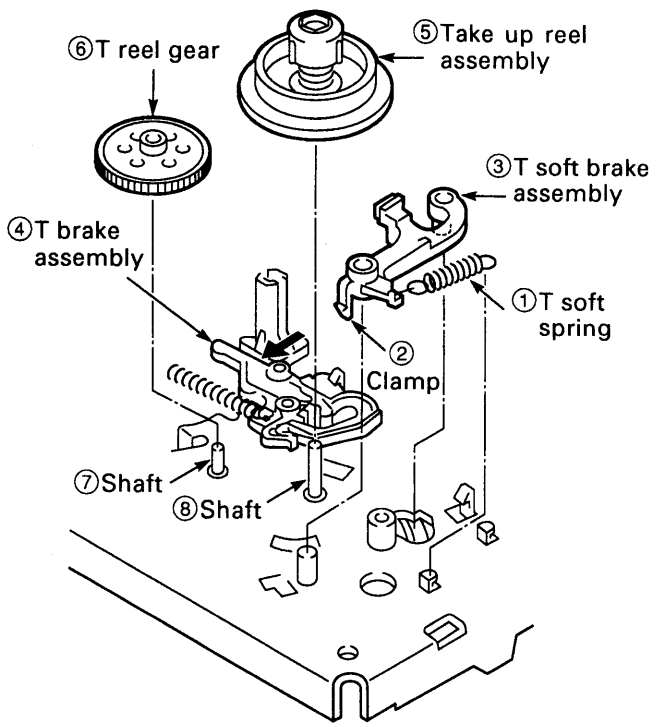


Fig.3-12-4

3-13. BRAKES

3-13-1. S BRAKE ASSEMBLY, T BRAKE ASSEMBLY, T BRAKE ACT SLIDE (See Fig.3-13-1)

1) Refer to section 3-3-1 and remove the cassette mechanism assembly.
2) Remove the two clamps ①, then remove the T brake act slide ②. (Note: You can remove the S brake assembly ⑦ and the T brake assembly ⑤ without removing the T brake act slide ②.)
3) Remove the brake spring ③.
4) Remove the two clamps ④ simultaneously, then remove the T brake assembly ⑤.
5) Remove the clamp ⑥, then remove the S brake assembly ⑦.

ASSEMBLY NOTES:

1. Apply grease (VHJ-0100) to the shafts ⑧ and ⑨.
2. When fitting the T brake act slide ②, align the mark ⑩ with the shaft ⑪.

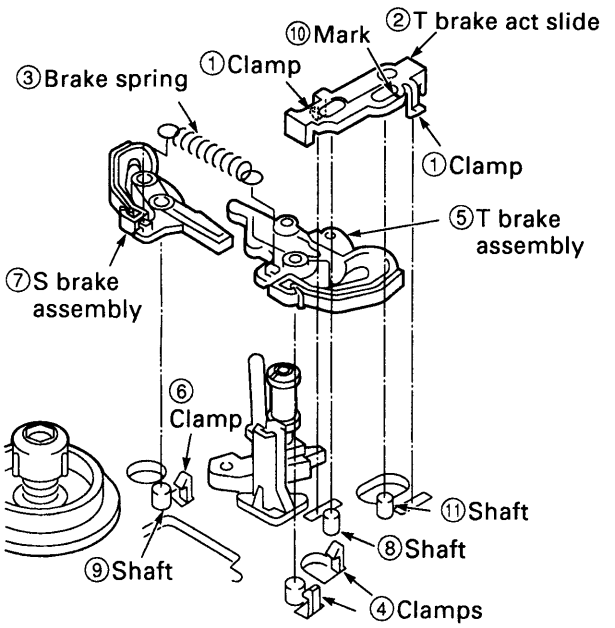


Fig.3-13-1

3-13-2. BRAKE CONTROL LEVER AND BRAKE ACT LEVER ASSEMBLY (See Fig.3-13-2)

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-15 and remove the wheel gear 2.
3) Refer to sections 3-12-1, then remove the reel belt and the reel pulley.
4) Remove the clamp ①, then remove the wheel gear 1 ②.
5) Remove the clutch change spring ③.
6) Remove the clamps ④ and ⑤, then remove the brake control lever ⑥. Remove the clamp ④ on the topside of the mechanism chassis.
7) Remove the brake return spring ⑦.
8) Refer to section 3-8 and remove the worm gear assembly.
9) Remove the clamp ⑧ and clamp ⑤, then remove the brake act lever assembly ⑨. To maintain the performance of the brake act lever assembly ⑨, do not disassemble it.

ASSEMBLY NOTES:

1. Apply grease (VHJ-0100) to the shafts ⑩ and ⑪, to the teeth of the wheel gear 1 ②, and to the pin ⑫ of the brake control lever ⑥.
2. Put the pin ⑬ of the brake control lever ⑥ into the cam groove ⑭ of the crescent slide.
3. Before fitting the wheel gear 1 ②, align the hole ⑮ with the hole ⑯ on the mechanism chassis.
4. Refer to section 3-15 and align the wheel gear 2.

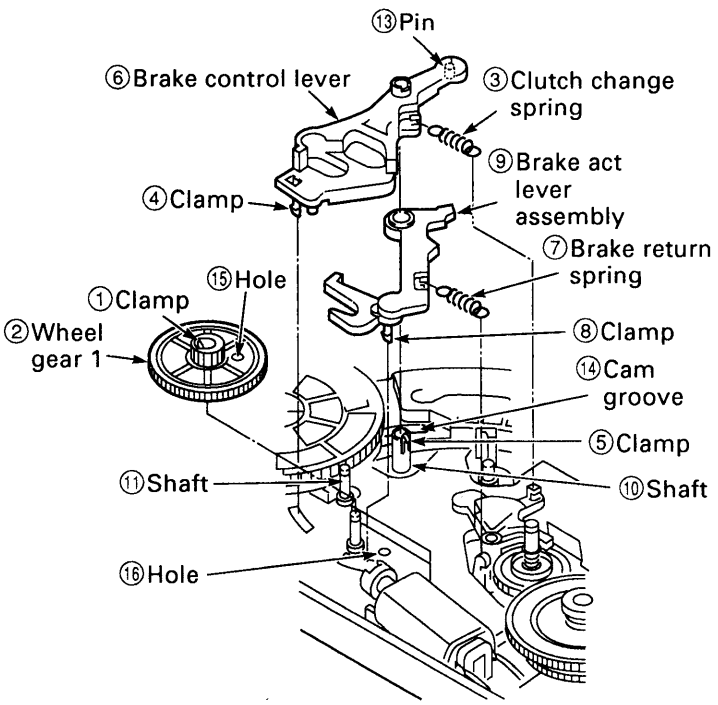


Fig.3-13-2

3-13-3. S BRAKE ACT SLIDE AND BT SPRING LEVER ASSEMBLY (See Figs.3-13-3 and 3-13-4)

1) Refer to section 3-16 and remove the crescent slide.
2) Refer to section 3-12-1 and remove the friction gear assembly.
3) Slide the S brake act slide ① in the direction of the arrow Ⓐ, then remove it.
4) Refer to section 3-11 and remove the BT spring.
5) Press the BT spring lever assembly ② until it touches the pin ③, then remove it.

ASSEMBLY NOTES:

1. Apply grease (VHJ-0100) to the shaft ④ shown in Fig. 3-13-3, and to the BT spring lever assembly ② and the S brake act slide ① shown in Fig.3-13-4.
2. After mounting the BT spring lever assembly ② on the Shaft ④, hook the BT spring onto the clamp ⑤ and press it until it touches the pin ⑥.
3. Make sure that the clamps ⑦, ⑧ and ⑨ have snapped into the S brake act slide ①. Align the arrow ⑩ on the S brake act slide ① with the arrow ⑪ on the mechanism chassis.

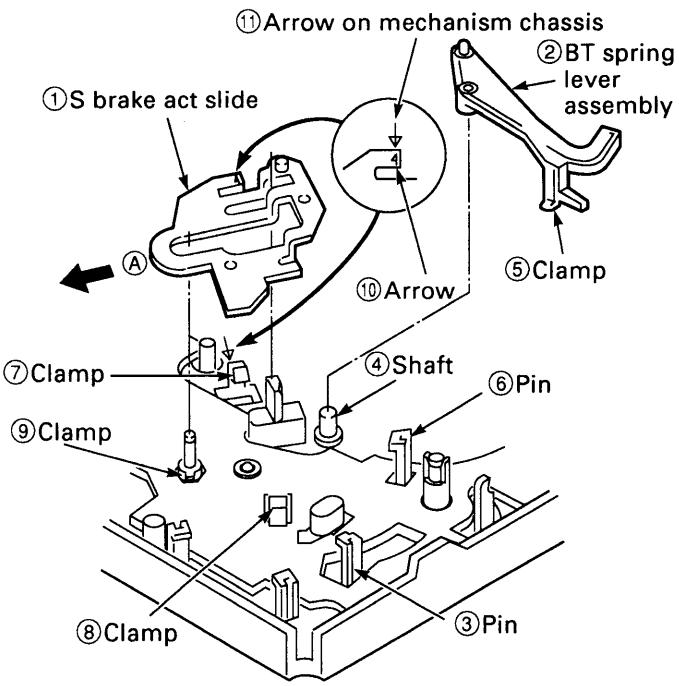


Fig.3-13-3

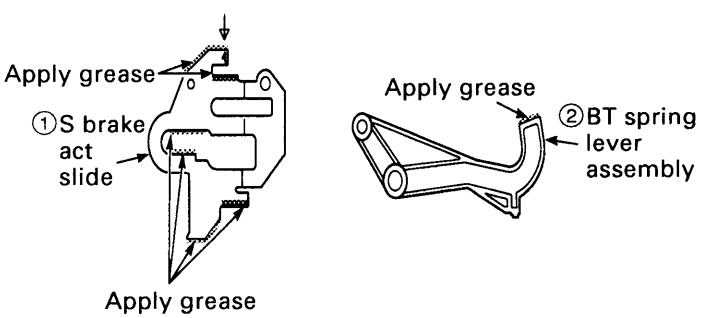


Fig.3-13-4

3-14. GUIDES

3-14-1. GUIDE ROLLER ASSEMBLY (See Fig.3-14-1)

1) Unscrew the two screws ①. When you do this, be careful not to damage the cylinder or the video head.
2) Remove the two guide roller assemblies ② by unscrewing them anticlockwise.

ASSEMBLY NOTES:

1. Tighten the two screws ① to a torque of 600 g/cm. After tightening, apply a screw-locking glue.
2. After replacing the parts, be sure to clean the guide roller and carry out tape path adjustment as described in section 4-3.

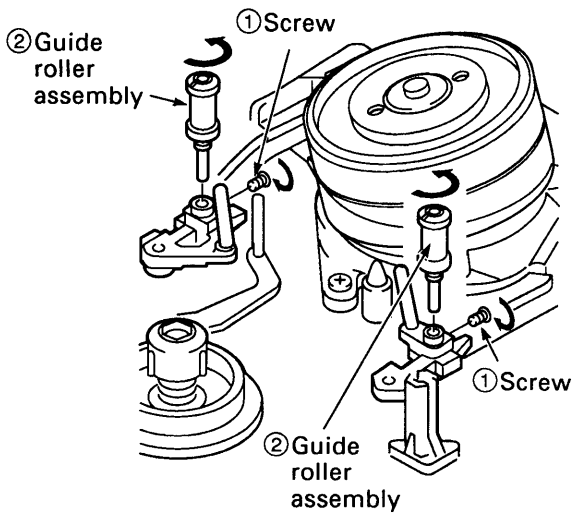


Fig.3-14-1

3-14-2. S AND T INCLINE MOUNTING ASSEMBLIES (See Fig.3-14-2)

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-5-2 and remove the cylinder unit.
3) Refer to section 3-1 and rotate the loading motor in the PLAY direction until tape loading is completed.
4) Shift the S incline mounting assembly ① slightly, in the direction of the arrow Ⓐ, then remove it from the S load lever assembly ②.
5) Shift the T incline mounting assembly ③ slightly, in the direction of the arrow Ⓑ, then remove it from the T load lever assembly ④.

ASSEMBLY NOTES:

1. Apply grease (VHJ-0100) to the rail (top, underside and sides) on the mechanism chassis.
2. When fitting the S and T incline mounting assemblies ① and ③ into the rail, turn the loading motor manually in the EJECT direction. When tape unloading begins, watch out in case the S and T incline mounting assemblies ① and ③ get caught in the rail.
3. After replacing the parts, clean the cylinder and the roller guide, then adjust the tape path as described in section 4-3.

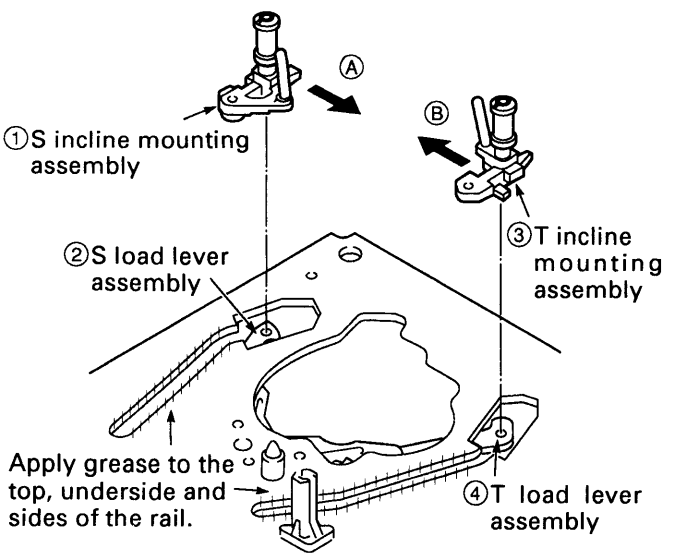

Ⓐ
Ⓑ
①S incline mounting assembly
②S load lever assembly
③T incline mounting assembly
Apply grease to the top, underside and sides of the rail.
④T load lever assembly

Fig.3-14-2

3-15. WHEEL GEAR 2, MAIN CAM AND MODE SWITCH (See Figs.3-15-1 and 3-15-2)

1) Refer to section 3-2 and remove the mechanism unit. When you do this, make sure the mechanism is in EJECT mode.
2) Refer to section 3-7-1, then remove the harness mounting.
3) Remove the clamp ①, then remove the wheel gear 2 ②.
4) Remove the washer ③, then remove the main cam ④.
5) After unscrewing the screw ⑤, remove the soldering from the terminal of the mode switch ⑥.
6) Remove the clamp ⑦, then remove the mode switch ⑥.

ASSEMBLY NOTES:

1. Apply grease (VHJ-0100) to the shafts ⑧, ⑨ and ⑩, to the teeth of the main cam ④, and to the all over the cam groove of main cam ④.
2. When fitting the mode switch ⑥, align it in Ⓐ Ⓑ order as shown in Fig.3-15-2. The alignment of the part Ⓑ is shown in Fig. A. Position the teeth of the mode switch ⑥ so that the sixth tooth space left of part Ⓐ is aligned with the triangular mark on the pinch cam gear ⑪. After aligning part Ⓑ, refer to section 3-9-2 and check the positioning of the mode switch, the pinch cam gear and the pinch lift cam.
3. Beforehand, remove the soldering from the soldered part of the MC-1 PWB assembly, in order to prevent the mode switch ⑥ being warped. Solder the mode switch ⑥ after tightening the screw ⑤ (See Fig. 3-15-1).
4. Align the hole in the crescent slide ⑫ with the hole in the mechanism chassis, as shown at point Ⓖ in Fig.3-15-2 (refer to section 3-16 and see the holes ⑤ and ⑥ in Fig.3-16-1).
5. When fitting the main cam ④, position the mode switch ⑥ and the front rack gear ⑬ as shown at points Ⓒ and Ⓓ respectively in Fig.3-15-2.
6. When fitting the gear wheel 2 ②, position the main cam ④ and the wheel gear 1 ⑭ as shown at points Ⓔ and Ⓕ respectively in Fig.3-15-2.

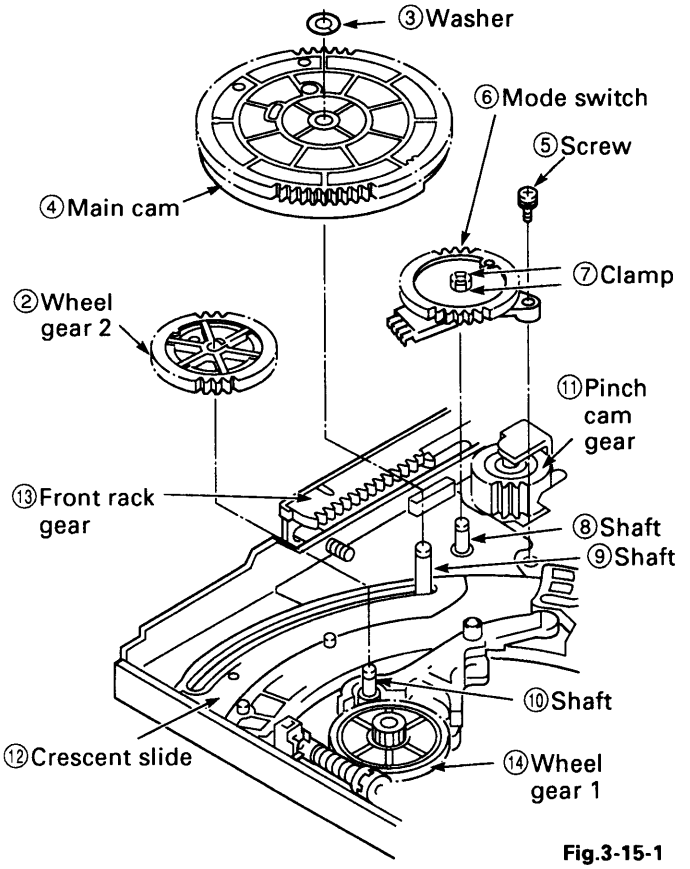


Fig.3-15-1

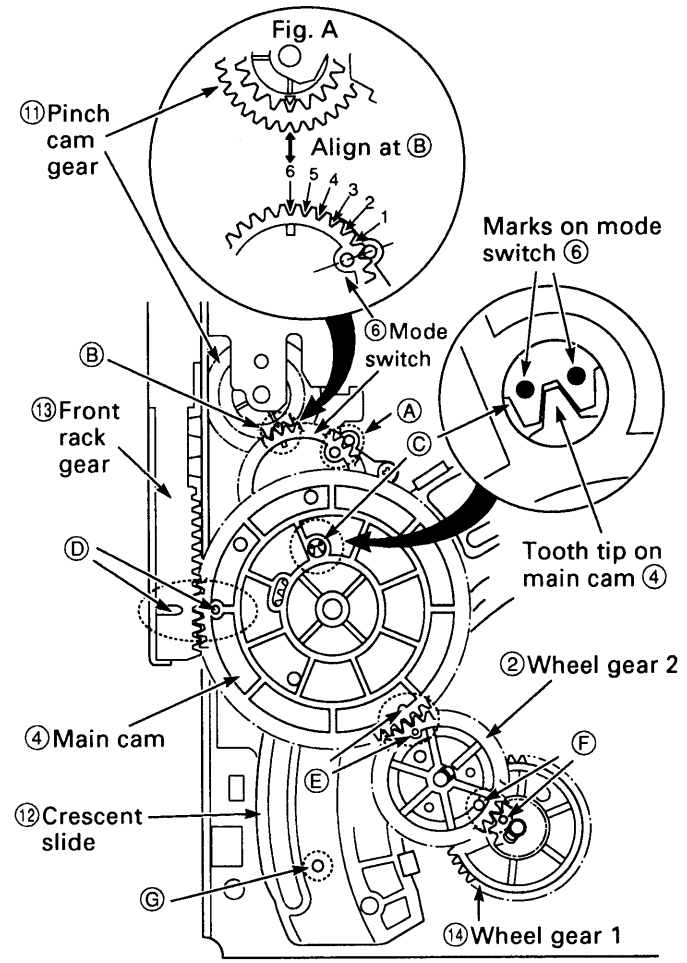


Fig.3-15-2

3-16. CRESCENT SLIDE (See Figs.3-16-1 and 3-16-2)

1) Refer to section 3-2 and remove the mechanism unit. When you do this, make sure the mechanism is in EJECT mode.
2) Refer to section 3-3-1 and remove the cassette mechanism assembly.
3) Refer to section 3-7-2 and remove the capstan brake assembly.
4) Refer to section 3-12-4 and remove the T soft brake assembly.
5) Refer to section 3-13-1 and remove the T brake act slide.
6) Refer to section 3-12-1, then remove the reel belt and the reel pulley.
7) Refer to section 3-15, then remove the wheel gear 2 and the main cam.
8) Refer to section 3-13-2, then remove the wheel gear 1 and the brake control lever.
9) Remove the two screws ⑪, then remove the crescent mounting ⑫.
10) Remove the clamps ① and ②, then raise the right end of the crescent slide ③ slightly. Slide the crescent slide ③ to the right until it comes away from the clamp ④, then remove it.

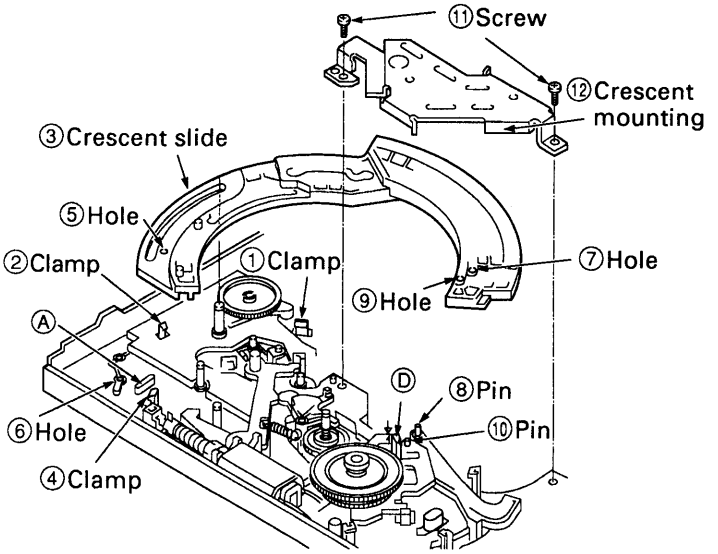


Fig.3-16-1

ASSEMBLY NOTES:

1. Apply grease (VHJ-0100) to the points Ⓐ,Ⓑ,Ⓒ and Ⓓ in Fig.3-16-1, and to the crescent slide ③ shown in Fig.3-16-2.
2. Before fitting the crescent slide ③, refer to section 3-13-3 and align the arrow on the S brake act slide with the arrow on the mechanism chassis. Then refer to Fig.3-17-3 and check that the S load gear and the T load gear have completed tape unloading.
3. When assembling the parts, raise the right side of the crescent slide ③ slightly, and keeping it in this position, slot the left side into the clamp④, then align the hole⑤ with the hole⑥ in the mechanism chassis. When you do this, check that the hole⑦ is aligned with the pin⑧ on the BT spring lever assembly, and that the hole⑨ is aligned with the pin ⑩ on the S brake act slide, before pressing the crescent slide③ into place. Check that the clamps ①, ② and ④ are engaged.
4. After assembly, check that each lever and each brake is working properly.

Apply grease to the areas shown in ▭
• The places marked by dots should be greased particularly generously.

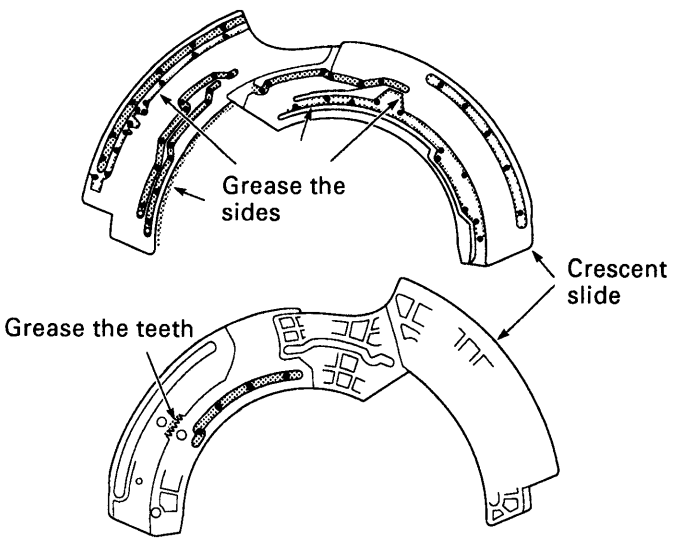


Fig.3-16-2

3-17. S LOAD GEAR, T LOAD GEAR, S LOAD LEVER ASSEMBLY AND T LOAD LEVER ASSEMBLY (See Figs.3-17-1, 3-17-2 and 3-17-3)

1) Refer to section 3-16 and remove the crescent slide.
2) Refer to section 3-14-2 and remove the S and T incline mounting assemblies.
3) Remove the clamp ①, then remove the components: the S load gear ②, the S load spring ③ and the S load lever assembly ④. When you do this, be careful not to damage the clamp ①, which can be damaged easily. Again, be careful when you disassemble the components, as the S load spring ③ will spring out.
4) Remove the following components: the T load gear ⑤, the T load spring ⑥, and the T load lever assembly ⑦. Be careful when you disassemble the components, as the T load spring ⑥ will spring out.

ASSEMBLY NOTES:

1. Apply grease (VHJ-0100) to the shafts ⑧, ⑨ and parts A shown in Fig.3-17-1. Then apply grease (VHJ-0100) to the parts shown in Fig.3-17-2.
2. When fitting the S load gear ② and the T load gear ⑤ align them in the tape-loaded state, as shown in Fig. A in Fig.3-17-3. Again, after completing tape-unloading on these gears, check that they are positioned as shown in Fig. B in Fig.3-17-3, then refer to section 3-14-2 and fit the S and T incline mounting assemblies.

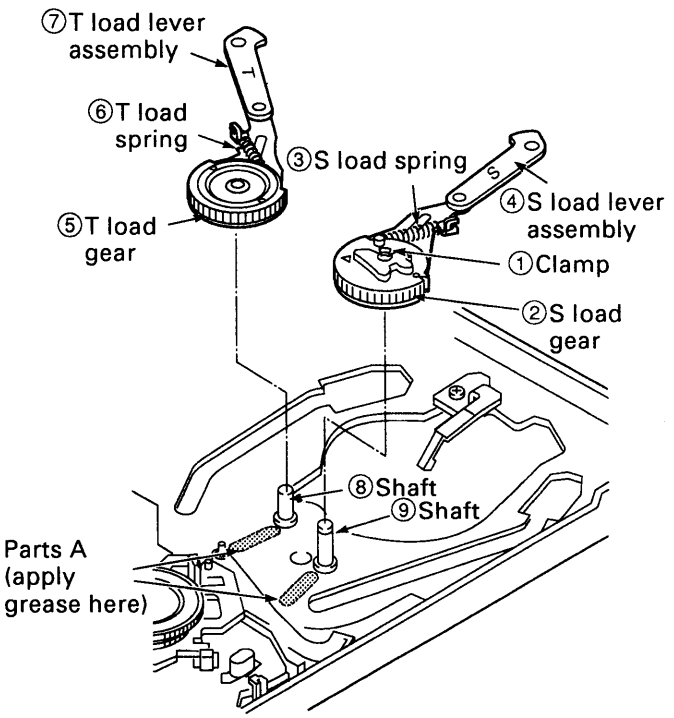
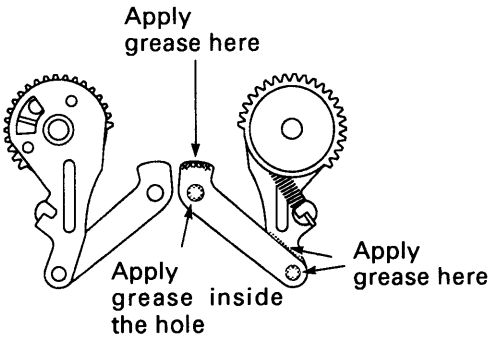


Fig.3-17-1

(T side)



(S side)

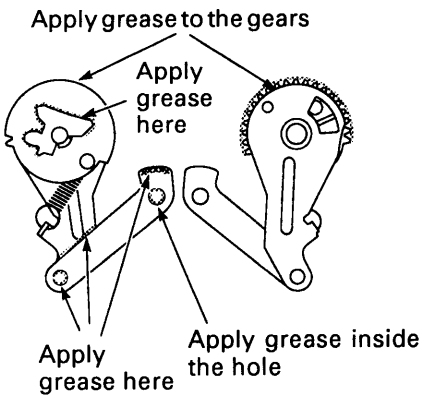


Fig.3-17-2

Fig. A: When tape loading is complete

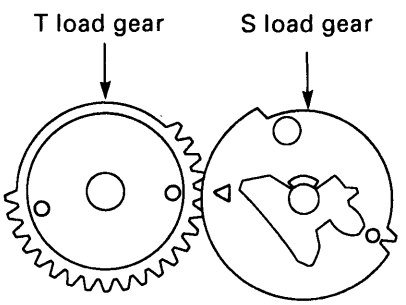


Fig. B: When tape unloading is complete

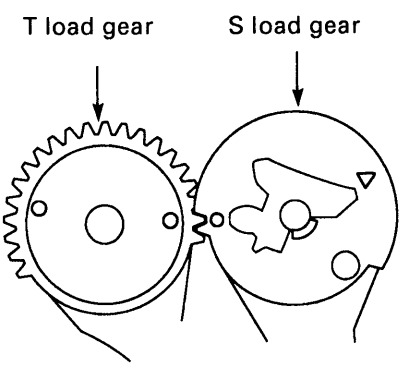


Fig.3-17-3

3-18. TAPE SENSORS, REEL SENSOR AND EP SW LEVER

3-18-1 TAPE TOP SENSOR AND TAPE END SENSOR (See Fig.3-18-1)

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-3-1 and remove the cassette mechanism assembly.
3) Remove the soldering from the MC-1 PWB assembly, then remove the photo diodes ①, ② and the LED ③. When removing the photo diode ② on the tape top sensor side, refer to section 3-15 and remove the main cam.

ASSEMBLY NOTES:

1. Fit the photo diodes ① and ② so that their photo-receptors to face the LED ③, as shown in Fig.3-18-1. Align the cuts in the LED ③ and the holder ④. Push the photo diodes ①, ② and the LED ③ as far down as they will go, so that they do not protrude above the top of their holders.
2. Do the soldering quickly.

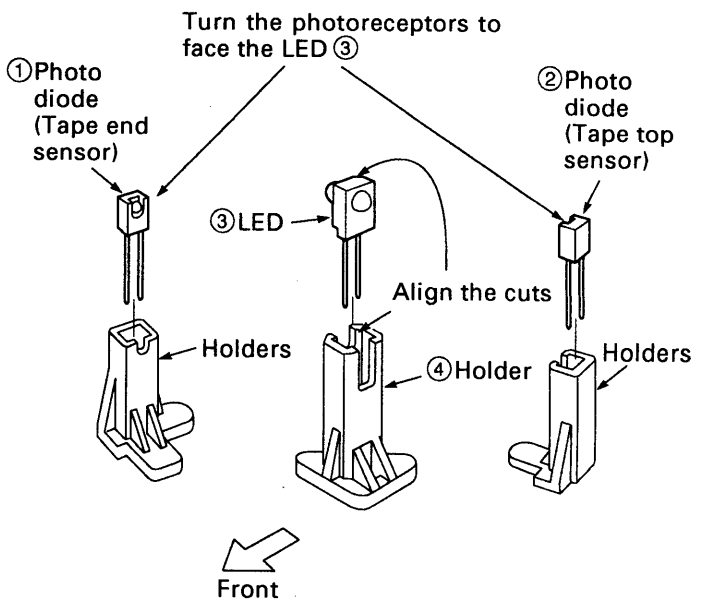


Fig.3-18-1

3-18-2. REEL SENSOR (See Fig.3-18-2)

1) Refer to sections 3-12-2 and 3-12-4, then remove the clutch mounting assembly, the T soft brake assembly and the take up reel assembly.
2) Refer to section 3-13-2, then remove the wheel gear 2, the wheel gear 1, and the brake control lever.
3) Remove the soldering from the MC-1 PWB assembly, then remove the photo diode (reel sensor) ①.

ASSEMBLY NOTES:

1. When assembling the parts, align the cut on the photo diode (reel sensor) ① with the protrusion on the mechanism chassis ②.
2. Do the soldering quickly.

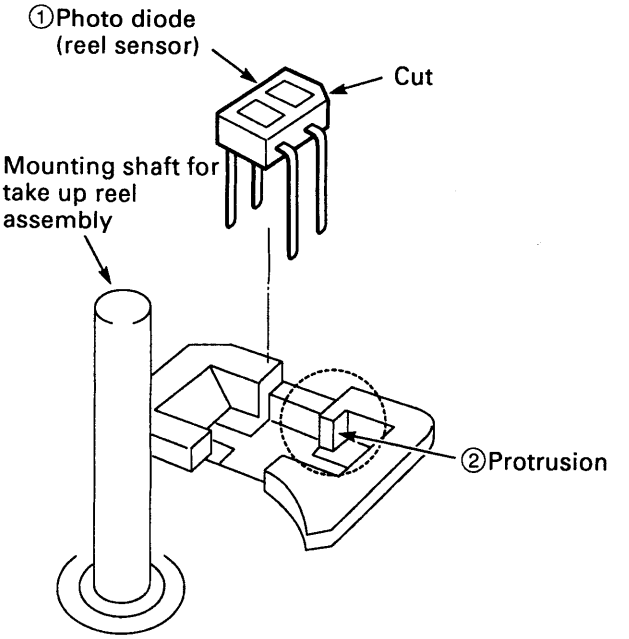


Fig.3-18-2

3-18-3. EP SWITCH LEVER (See Fig.3-18-3)

1) Refer to section 3-3-1 and remove the cassette mechanism assembly.
2) Remove the EP switch spring ①.
3) Remove the clamp ②, then remove the EP switch lever ③.

ASSEMBLY NOTES:

1. Apply grease (VHJ-0100) to the protrusion ④ on the back of the EP switch lever ③.
2. After fitting the cassette mechanism assembly, check that in EJECT mode, the EP switch lever ③ does not touch the EP switch ⑤.

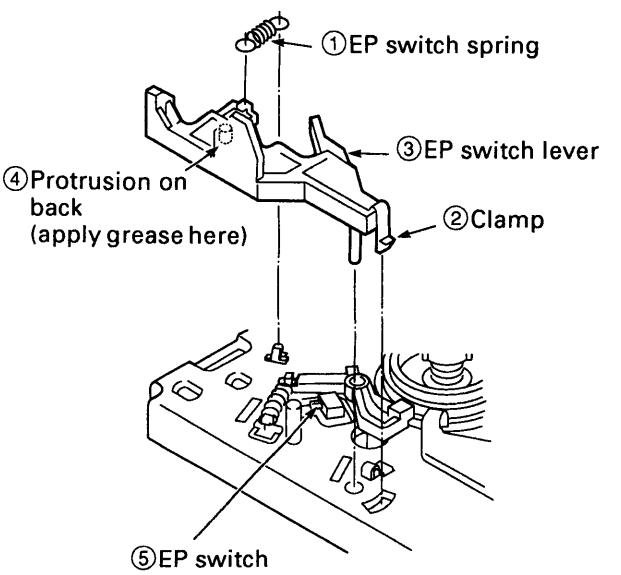


Fig.3-18-3

4. MECHANISM CHECKS AND ADJUSTMENTS

4-1. REEL TABLE TORQUE CHECK

1)With the power switch turned OFF, stick black vinyl tape over the photo diodes of the tape sensors. Then turn the power switch ON. Front loading will begin. Refer to section 3-2 and Fig.3-2-2, and release the locks of the tray lock lever and the lid opener lever.

NOTES:

1. The measurements must be taken without any incandescent light or daylight.

2. If the mechanism cannot be put into PLAY, FF or REW mode by the method described in 1) above, make a dummy cassette tape, as shown in Fig.4-1-2. The dummy cassette tape is made as follows: Unscrew the five screws on the underside, remove the reels, leaf springs and other parts on the supply and take up sides, make holes in the upper surface as wide as the reel diameter, then assemble the parts.

2) Put the mechanism into REW mode, wait at least 10 seconds, then measure the torque value of the reel table on the supply side. It should be at least 600 g/cm. Take the measurement with the torque dial gauge (VHJ-0004) held in position in your hand (lock torque). While taking the measurement, rotate the reel table (take up reel assembly) on the take up side with your hand so that the reel sensor does not respond.

3) After switching to FF mode, wait for at least 10 seconds and then measure the torque value of the reel table on the take up side. It should be at least 600g/cm (lock torque).

4) After switching to PLAY mode, wait for at least 10 seconds and then measure the torque value of the reel table on the take up side. It should be between 80 and 140g/cm (lock torque).

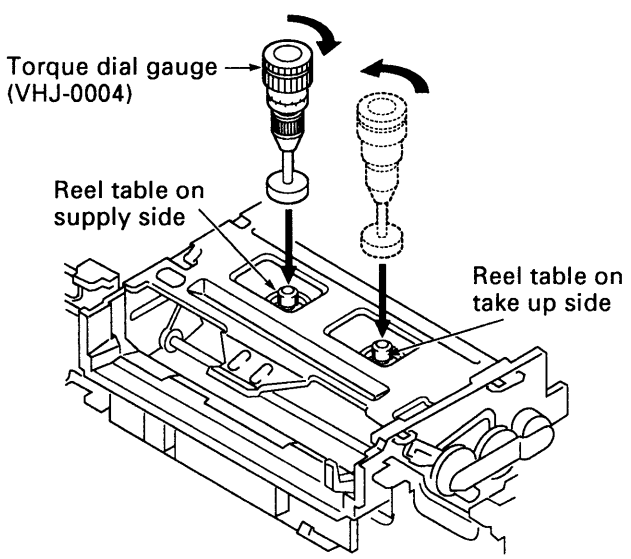


Fig.4-1-1

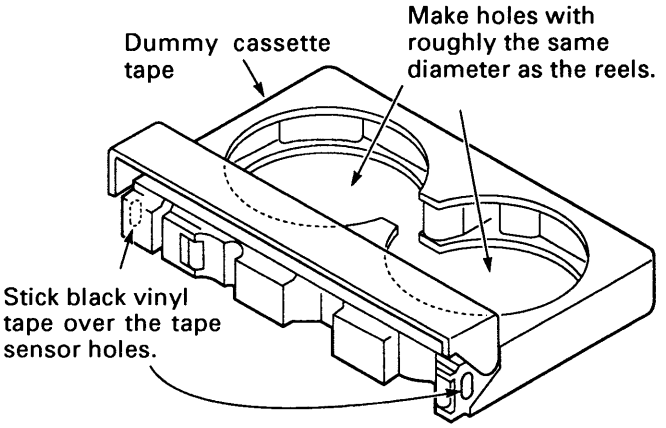


Fig.4-1-2

4-2. ADJUSTING THE BT LEVER ASSEMBLY POSITION AND CHECKING THE BACK TENSION TORQUE IN PLAY MODE

4-2-1. BT LEVER POLE POSITION ADJUSTMENT (See Fig.4-2-1)

1) Without loading a cassette tape, put the mechanism into PLAY mode (turn the power switch OFF).

2) Adjust point Ⓐ on the band brake assembly by rotating it so that the tip of the BT lever assembly is aligned with the line on the left side of the mechanism chassis.

3) Refer to section 4-2-2 and check that the back tension torque is between 30 and 50g/cm.

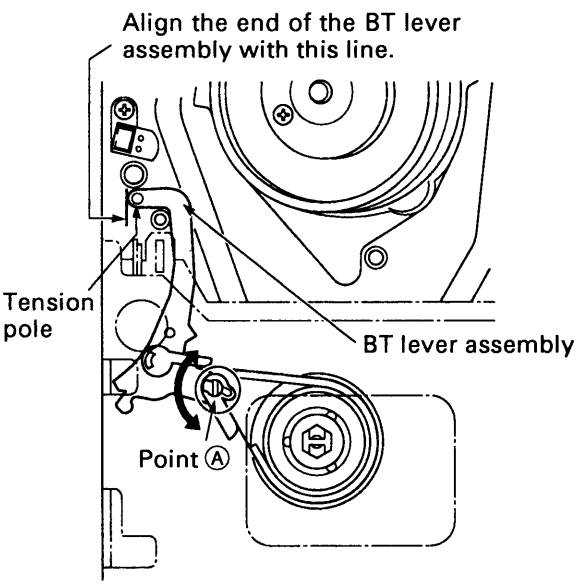


Fig.4-2-1

4-2-2. CHECKING THE BACK TENSION TORQUE PLAY MODE

1) Mount the cassette torque meter (VHJ-0016) and switch to PLAY mode.

2) Check that the back tension torque is between 30 and 50g/cm.

4-3. TAPE PATH ADJUSTMENT

In normal circumstances, the tape path system does not need to be adjusted. However, after removing or replacing one of the parts shown in Fig.4-3-1, you should check and adjust the tape path. The adjustment of the tape path is carried out while monitoring the envelope waveform of the video head output, using an oscilloscope. To make sure that the tape drawn off the reel runs freely and without excessive tension along all the tape guides and cylinders (drums), it is also important to check each tape guide by eye.

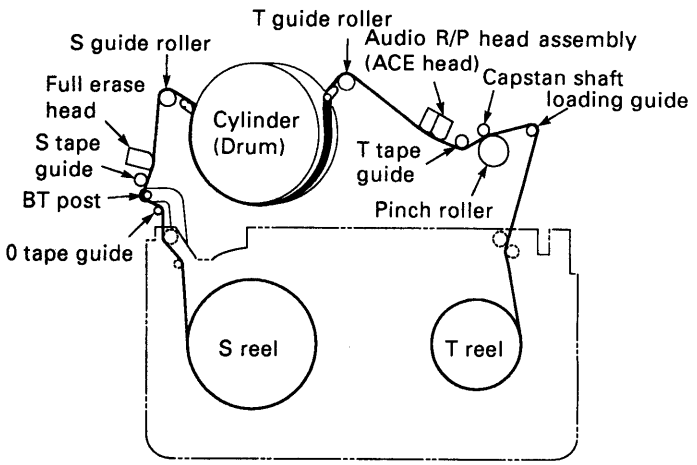


Fig.4-3-1

4-3-1. ADJUSTMENT PROCEDURE

1. Select a PAL or NTSC alignment tape or blank cassette tape, according to the transmission system of the VCR you are repairing.

NTSC: For models with 525 scanning lines and a field frequency of 60Hz

PAL: For models with 625 scanning lnes and a field frequency of 50Hz

2. Clean the tape guides, the cylinder (drum), the capstan Shaft, the audio R/P head (ACE head) and the full erase head.
3. Using an oscilloscope, adjust the height of the guide roller and carry out horizontal position adjustment,height adjustment and azimuth adjustment on the audio R/P head (ACE head). When observing the envelope waveform, bring the CH-1 probe into contact with the envelope waveform test point, and bring the CH-2 probe into contact with the switching pulse (SW P) test point. While adjusting the tape path, set the trigger at the low side of the switching pulse (SW P) in order to observe the output waveform on the CH-1 side of the video head.

NOTE:The contact point for the oscilloscope varies from one model to another, so to find the correct point for your model, refer to the figure entitled "Test point for tape path adjustment" in the electrical circuit section of the service manual.

4. When checking the tape path by eye, use a dental mirror.

4-3-2. LOAD LEVER ASSEMBLY HEIGHT ADJUSTMENT (See Fig.4-3-2)

1. Refer to sections 3-9-2, and remove the opener mounting .
2. Position the height adjustment tool (VHJ-0102)③ under the full surface of the protrusion ② on the load lever assembly ①, as shown in Fig.4-3-2.
3. Using your fingers, gently screw the adjustment nut ④ clockwise into the nut box (VHJ-0048) ⑤ until the protrusion ② of the load lever assembly① touches the height adjustment tool (VHJ-0102)③ and the screw starts to feel tight. Next, loosen the adjustment nut ④ by 270° anticlockwise.
4. Load a cassette tape (NTSC: T-160, PAL: E-240) and switch to PLAY mode. Check that when you do this, no scratches appear on the upper or lower edges of the tape. If scratches do appear, re-adjust the height.

Arrange the equipment so that the whole surface of the projection on the load lever assembly is positioned over the height adjustment tool (VHJ-0102) when seen from directly overhead.

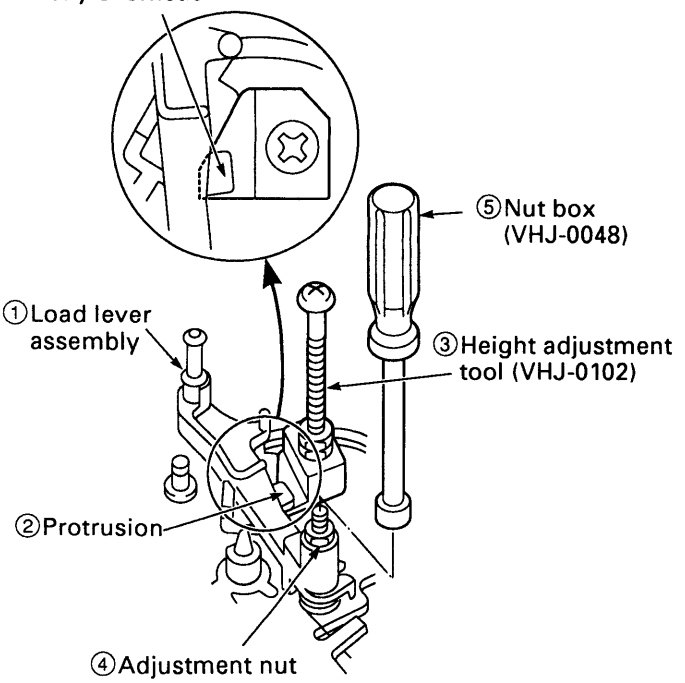


Fig.4-3-2

4-3-3. GUIDE ROLLER HEIGHT ADJUSTMENT (See Figs.4-3-3 and 4-3-4)

1) Play the Alignment Tape (NTSC: VHJ-0006, PAL: VHJ-0009) and check that the envelope waveform is at its maximum at the tracking centre. Then, after loosening the S guide roller and the T guide roller by rotating them anticlockwise, tighten them in turn until the envelope waveform becomes flat. If the envelope waveform is not at its maximum at the tracking centre, refer to section 4-3-4 and carry out a rough adjustment of the horizontal position of the audio R/P head (ACE head) before adjusting the guide rollers.
2) Adjust the S guide roller.
   ① Press the tracking button (Channel –), and check whether, when the envelope waveform has reached 50% of its maximum, the front half of the envelope waveform is flat. If not, fine-tune the S guide roller as follows.
   a. If the front half of the envelope waveform is as shown in Fig.4-3-4 (a), this means that you have pressed the S guide roller too far. Therefore, loosen it slightly, and when it is in the state shown in Fig.4-3-4 (b), tighten it again, stopping when the envelope waveform is flat.
   b. If the front half of the envelope waveform is as shown in Fig.4-3-4 (b), this means you have not pressed the S guide roller far enough. Therefore, tighten it slightly, stopping when the envelope waveform becomes flat.
   c. If the front half of the envelope waveform is as shown in Fig.4-3-4 (c), it may happen that when you tighten the S guide roller, the wrapper waveform does not disappear, but sinks into the flat part, as shown in Fig.4-3-4 (d). If this happens, the status shown in Fig.4-3-4 (c) is normal, so loosen the S guide roller, then tighten it again until the envelope waveform is as shown in Fig.4-3-4 (c).
   ② Check that at the tracking centre, the output of the front half of the envelope waveform is not less than 80% of the maximum.
   ③ Rotate the S guide roller 20° anticlockwise.
3) Adjust the T guide roller.
   ① Press the tracking button (channel –) and check whether, when the envelope waveform is 50% of maximum, the back half of the envelope waveform is flat. If not, loosen the T guide roller slightly, then tighten it gradually until the back half of the envelope waveform becomes flat.
   ② Check that the output for the back half of the envelope waveform is at its maximum at the tracking centre.
4) Check that the envelope waveform does not fluctuate when you switch from F-SEARCH to PLAY or from R-SEARCH to PLAY. If it does fluctuate, repeat steps 3) and 4).

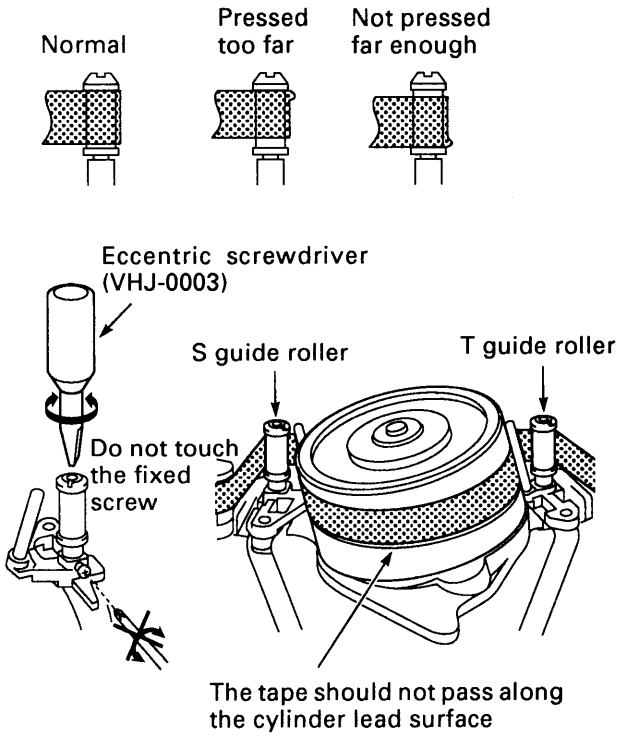

Normal
Pressed too far
Not pressed far enough
Eccentric screwdriver (VHJ-0003)
S guide roller
T guide roller
Do not touch the fixed screw
The tape should not pass along the cylinder lead surface

Fig.4-3-3

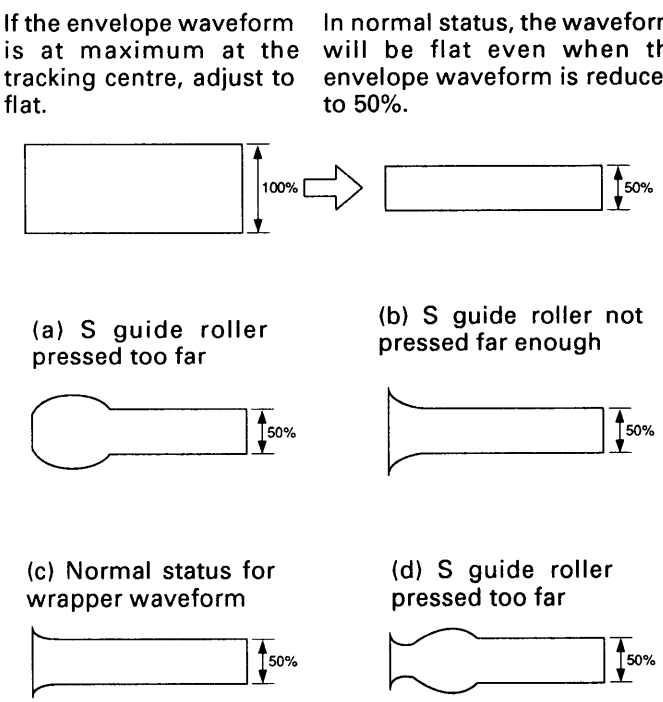

If the envelope waveform is at maximum at the tracking centre, adjust to flat.
In normal status, the waveform will be flat even when the envelope waveform is reduced to 50%.
100%
50%
(a) S guide roller pressed too far
(b) S guide roller not pressed far enough
50%
50%
(c) Normal status for wrapper waveform
(d) S guide roller pressed too far
50%
50%

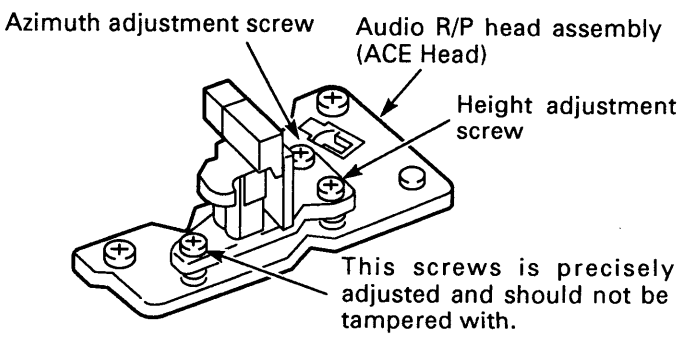
Fig.4-3-4

4-3-4. AUDIO R/P HEAD (ACE HEAD) HEIGHT ADJUSTMENT, AZIMUTH ADJUSTMENT AND HORIZONTAL POSITION ADJUSTMENT

(1) Azimuth adjustment (See Fig.4-3-5)

1) Play the alignment tape (NTSC: VHJ-0005, PAL: VHJ-0008) and observe the waveform of the audio output, using an oscilloscope.
2) Loosen the height adjustment screw in the counter-clockwise direction and decrease the amplitude of the audio output waveform. In this state, tighten the screw in the clockwise direcion and maximize the amplitude. Slightly tighten the screw further in the clockwise direction and decrease the amplitude, and then loosen it slowly in the counterclockwise direcion until the amplitude starts to reach the maximum.
3) Set the amplitude of the audio output waveform to maximum by rotating the azimuth adjustment screw.
4) Make sure that the tape edge is running between the top of the audio head and the bottom of the control head.
   Gaps A and B should be roughly equal.

NOTE:Rotate the adjustment screw with a slotted screwdriver. Do not apply excessive force vertically. As the height adjustment screw also adjusts tilt, rotate it slowly. Do not rotate it excessively. And apart from the this screw, and height adjustmment screw, the screws is precisely adjusted before shipment from the factory, and should not be tampered with. Tampering with these screws can lead to scratching of the tape and other problems.


Azimuth adjustment screw
Audio R/P head assembly (ACE Head)
Height adjustment screw
This screws is precisely adjusted and should not be tampered with.

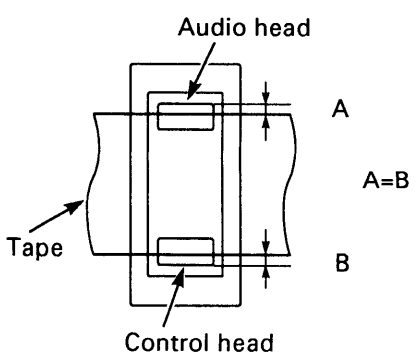


Fig.4-3-5

(2) Horizontal position adjustment (See Fig.4-3-6)

1) Play the alignment tape (NTSC: VHJ-0006, PAL: VHJ-0009).
2) Press the tracking buttons (channel + and channel –) simultaneously and set the tracking to the centre.
3) Using an oscilloscope, observe the waveform of the video head output.
4) Loosen the two fixed screws on the audio R/P head (ACE head) by between 20° and 30° anticlockwise.
5) Using a slotted screwdriver, adjust the position of the audio R/P head (ACE head). At the position where the amplitude of the envelope waveform is at its maximum at the tracking centre, tighten the fixed screw on the audio R/P head (ACE head). When you do this, check that the envelope waveform changes equally whether the tracking is shifted by pressing the tracking button in the plus or the minus direction.
6) Play the alignment tape (NTSC: VHJ-0007 PAL: VHJ-0052) and check that the amplitude of the envelope waveform is at its maximum at the tracking centre. If not, repeat steps 1) to 6).
7) Refer to the electrical adjustments section of the service manual, and adjust the switching position of the servo circuit.

NOTE:

1. When you press the tracking buttons (channel + and channel –) simultaneously, the tracking is reset to the tracking centre. When the tracking is at the tracking centre, the message "T - : - " will appear in place of the clock display on the front panel. If you keep pressing the channel – button the messages "T -: " and "T - -: " will appear, while if you keep pressing the channel + button, the messages "T : -" and "T : - - " will appear. Three seconds after you stop pressing the tracking buttons, the clock display will re-appear.
2. The check described in paragraph 6) is not necessary for models in which the only tape speed is SP mode.

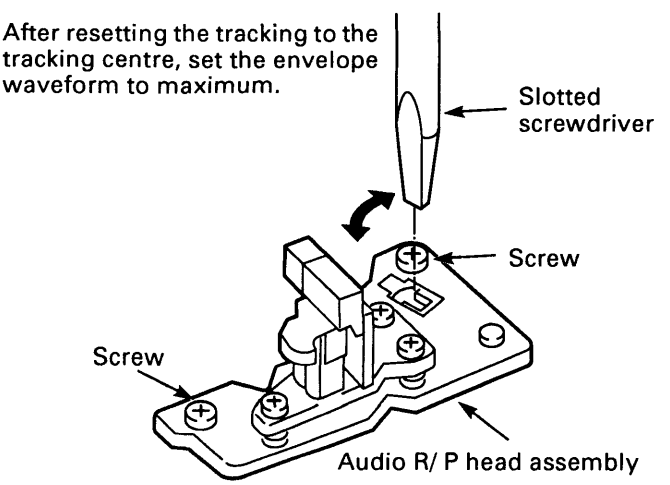

After resetting the tracking to the tracking centre, set the envelope waveform to maximum.
Slotted screwdriver
Screw
Screw
Audio R/ P head assembly

Fig.4-3-6

4-3-5. CHECKING AFTER ADJUSTMENT

1) Play the alignment tape (NTSC: VHJ-0006, PAL: VHJ-00 09) and check that the envelope waveform is activated immediately and that there are no fluctuations in the envelope waveform or the audio output waveform.
2) Load a cassette tape (NTSC: T-120, PAL: E-180) and use it to record and replay. Check that the envelope waveform is activated immediately and that there are no fluctuations in the envelope waveform or the audio output waveform. (When recording on the tape, input 1kHz to the audio input terminal. Use a scratch-free cassette tape (NTSC: T-120, PAL: E-180).) Check that at the tracking centre, the front half down and back half down are not more than 20% of the value at the point where the envelope waveform amplitude is at its maximum.
3) Check that the envelope waveform is activated immediately when you switch from PLAY to R-SEARCH or from R-SEARCH to PLAY. Check that there is no slack in the tape next to the pinch roller.
4) Check that the envelope waveform is activated immediately when you switch to PLAY from FF, REW, F-SEARCH, R-SEARCH or STOP mode. Check that there is no slack in the tape next to the pinch roller.
5) Check that the tape is not curling or riding up on the upper or lower flanges of the tape guides in PLAY, FF, REW, F-SEARCH or R-SEARCH modes.
6) Check that in PLAY mode, the tape runs as shown in Fig.4-3-7.
7) Load a tape (NTSC: T-160, PAL: E-240) and play it back. carry out the checks described in steps 3) to 5) above.

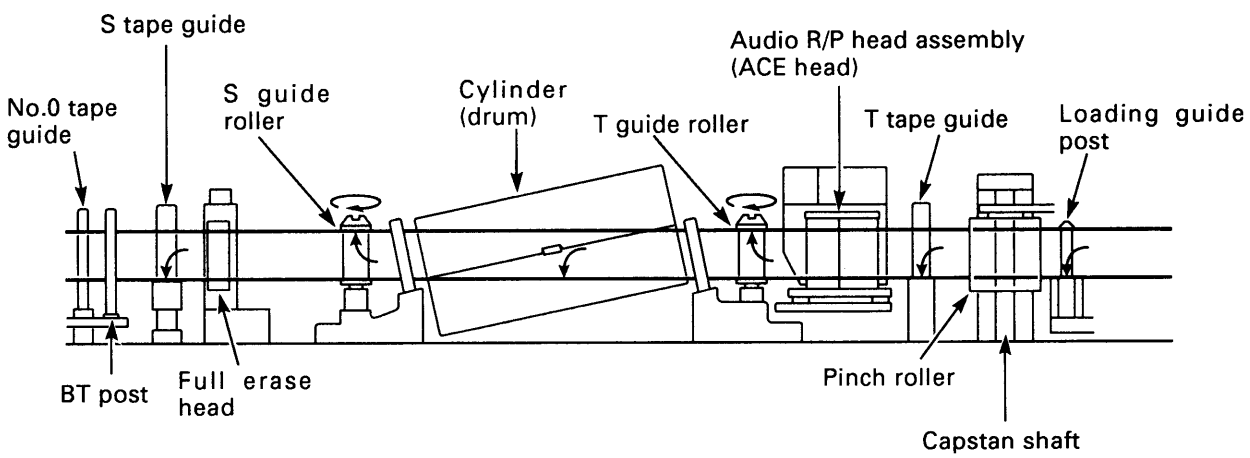


Fig.4-3-7

FILE NO.

SUPPLEMENT SERVICE TECHNICAL INFORMATION

SANYO

FISHER

Video Cassette Recorder

V95 II MECHANISM

Use this supplement together with the V95 I mechanism manual (Reference No. MM531433) of the Service Technical Information published in 1995.

Please see other materials with Reference No. given in table below.

Materials	Model No.	Reference No.
Basic Service Technical Information	V95 I Mechanism	MM531433

VHS
PAL SECAM NTSC

Contents

Outline 2
3-5-3. CYLINDER MOTOR (ROTOR AND STATOR) 2
3-5-4. CYLINDER ASSEMBLY 3
3-14-2. S AND T INCLINE MOUNTING ASSEMBLIES 3

MC-Service

REFERENCE No.MS531500

Outline

The V95 II mechanism has the same basic structure as the V95 I mechanism, but the part for mounting its cylinder assembly has been changed.

The cylinder assembly of the V95 I mechanism requires a die casting cylinder mounting to be mounted. In the V95 II mechanism, the cylinder assembly can mounted directly to the mechanism chassis due to changes made in the chassis form.

As the V95 II mechanism does not require a cylinder mounting, its cylinder assembly and S • T incline mounting assemblies are replaced differently from the V95I mechanism.
This manual describes only the methods for replacing the cylinder assembly and S • T incline mounting assemblies. For other information, refer to the Service Technical Information (Reference No. MM531433).

[Page 13]

3-5-3. CYLINDER MOTOR (ROTOR AND STATOR) (See Fig.3-5-6)

1) Refer to section 3-2 and remove the mechanism unit.
2) Remove the screw ① and remove the cylinder earth assembly ②.
3) Remove the two screws ③, the rotor ④ and the spacer ⑧.
4) Remove the three screws ⑤ and the stator ⑥.

ASSEMBLY NOTES:

1. When fitting the rotor ④, align the long hole ⑨ -beside the triangular mark on the rotor ④ - with the hole ⑩ in the rotor disk.
2. When fitting the screws ③ and ⑤, use the torque gauge screwdriver (VHJ-0014). Give the screws a tightening torque of 3 kg/cm.
3. Align the dowels ⑪ on the cylinder earth assembly ② with the holes ⑫ in the chassis.
4. After fitting the mechanism unit, do the switching position adjustment of the servo circuit.

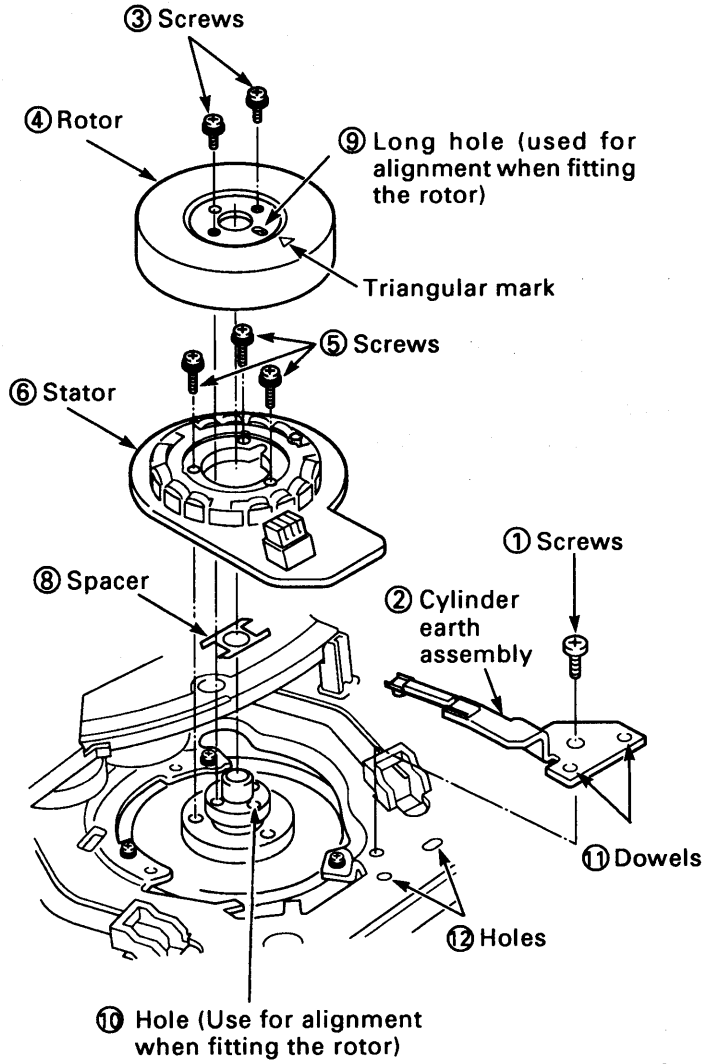


Fig.3-5-6

[Page 14]

3-5-4. CYLINDER ASSEMBLY (See Fig.3-5-7)

1) Refer to sections 3-5-3, and remove the cylinder unit, the rotor, and the stator.
2) Remove the three screws ① and the cylinder assembly ②.

ASSEMBLY NOTES:

1. Be careful not to scratch or soil the top of the cylinder. After fitting the cylinder, clean the surface.
2. Align the cylinder assembly ② with the two dowels ④ on the mechanism chassis ③.
3. After fitting the cylinder assembly, do the tape path adjustment as instructed in section 4-3 and do the switching position adjustment of the servo circuit.

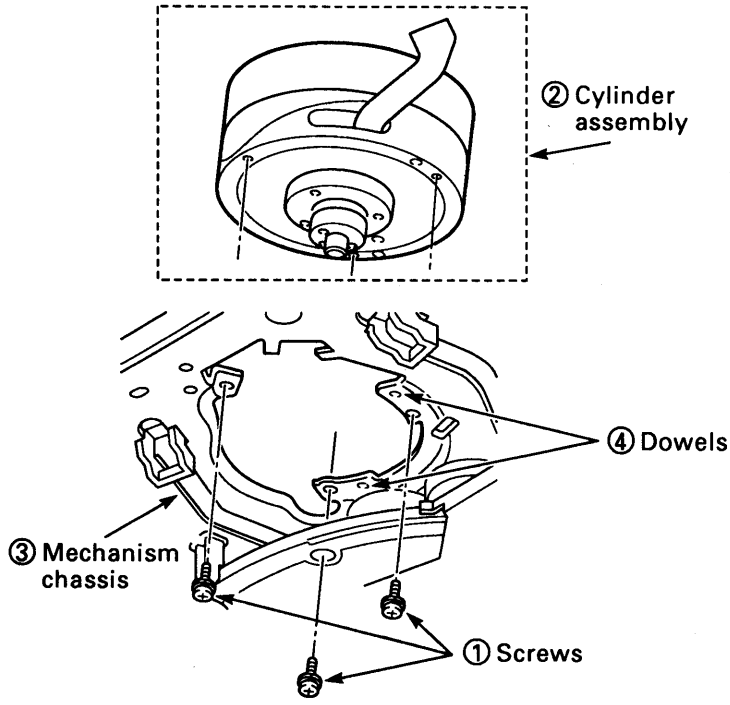


Fig.3-5-7

[Page 22]

3-14-2. S AND T INCLINE MOUNTING ASSEMBLIES (See Fig.3-14-2)

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-4 and remove the cleaner lever.
3) Remove the four screws ⑤ and take off the two catcher mountings ⑥.
4) Refer to section 3-1 and rotate the loading motor in the PLAY direction until tape loading is completed.
5) Shift the S incline mounting assembly ① slightly, in the direction of the arrow Ⓐ, then remove it from the S load lever assembly ②.
6) Shift the T incline mounting assembly ③ slightly, in the direction of the arrow Ⓑ, then remove it from the T load lever assembly ④.

ASSEMBLY NOTES:

1. Apply grease (VHJ-0100) to the rail (top, underside and sides) on the mechanism chassis.
2. When fitting the S and T incline mounting assemblies ① and ③ into the rail, turn the loading motor manually in the EJECT direction. When tape unloading begins, watch out in case the S and T incline mounting assemblies ① and ③ get caught in the rail.
3. Aline the dowels on the catcher mounting ⑥ with the holes ⑦ in the mechanism chassis.
4. After replacing the parts, clean the cylinder and the roller guide, then adjust the tape path as described in section 4-3.

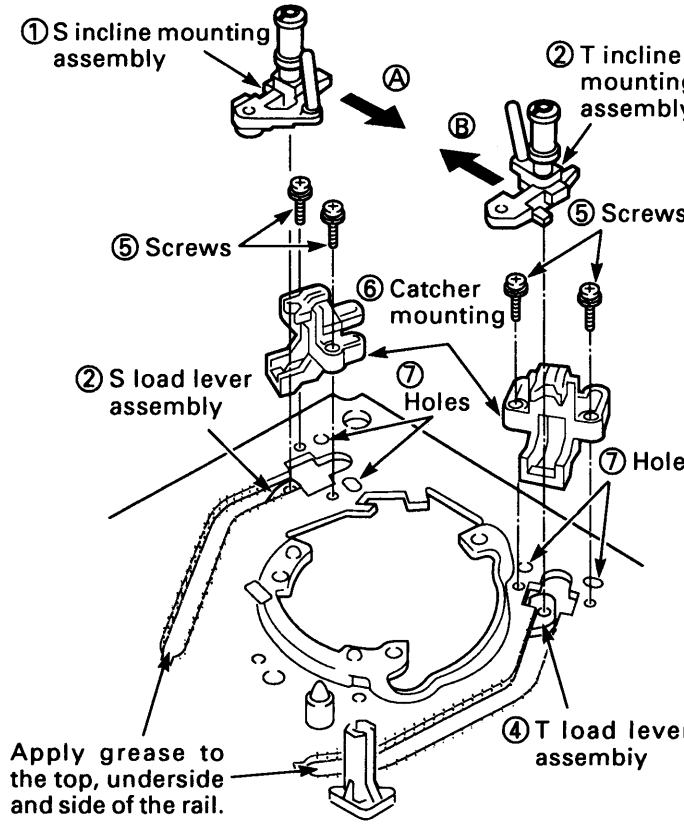


Fig.3-14-2

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